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TREATMENT OF ULCERATIVE COLITIS

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The long-term management of patients with chronic ulcerative colitis is difficult, and the usual therapeutic regimens are often unrewarding. For many years various etiological agents have been postulated, including bacteria,[1] viruses,[2] enzymes such as lysozyme,[3] food allergies,[4] and vitamin deficiencies.[5] Eventually the evidence on all of these has been inadequate.[6] The present-day chemotherapeutic agents and antibiotics are apparently useful only in some acute febrile exacerbations of the disease.[7] Their failure to basically alter the course of the disorder indicates that microorganisms are probably not involved primarily. Murray [8] noted that the onset and each exacerbation of the disease occurred during periods of stressful life situations. Many investigators have corroborated and elaborated his findings.[9] Experimental studies have demonstrated the relationship between life stress and ulceration of the colonic mucosa in man.[10]

This report is based on the study of 19 unselected persons with chronic ulcerative colitis. The entire management was in the hands of one physician, who had as adjunct the services of a social worker.

OUTLINE OF THE MANAGEMENT OF THE PROBLEM

Treatment was carried out in interviews spaced at intervals of a few days or weeks, according to the apparent needs of the subject. In the interview the physician's role was that of a detached but interested, reliable, consistent and, supporting confidant. The interviews, by encouraging the patient to express himself freely, to engage in introspection, to recall, relate, and interpret dreams, and to make associations with his thoughts, feelings, and life events, were directed toward bringing about in the patient an understanding of himself and encouraging him to a more constructive orientation toward his life and the people in it.

The greatest benefit to the patient was a constructive physician-patient relationship. The patient was given opportunity and was encouraged to express with a free show of feelings, to a sympathetic and appreciative physician, the major complaints and difficulties in his life situation. The physician never criticized such feelings. He encouraged the patient to express his thoughts, and to be confident that such attitudes would not threaten his relationship with others or exclude him from the love of his closest relatives. Ambivalent feelings toward a spouse or parent were discussed, and the universality of such attitudes was explained.

Encouragement and support of the patient were freely given by the physician. These employed the warmth of human relationships. The patient's own assets and accomplishments were emphasized in building the self-esteem and self-confidence of the patient. A tolerant attitude on the part of the physician was essential. No problem could be too small to consider, and interviews

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with spouses and relatives were often necessary. Special consideration was given the patient during periods of unusual stress. The patient was made to feel free to telephone the physician at almost any time. Patients were permitted to make appointments at an earlier date than the one agreed on when unexpectedly difficult situations arose. During times of severe symptoms, the patient was seen frequently, as often as daily should the needs of the patient require such care.

Patients were given an explanation of the disease process, and this was repeated at suitable intervals, such as during periods of severe symptoms. Emphasis was placed on the participation of the bodily viscera in different moods and feeling states. In addition to the usual "routine" medical history, a detailed personal biography was undertaken. Periods of illness were correlated with periods of emotional stress.

The background, the family, the cultural setting, the emotional responses, and the aims and ambitions of the patient were explored in order to understand the patient and to help him to understand himself. In some instances it was possible for the patients to recognize the basis of their feelings and attitudes (for example, in the light of their childhood experiences) and to alter them significantly and for the better (case 1). However, many patients were unable to incorporate this knowledge into their daily behavior, and symptoms did not change. In such instances it was felt better to have the patient realize and accept his dependent position and to make the best of it, rather than to try to alter it. That the need to be cared for and loved is universal and acceptable was emphasized, as was the fact that attempts to reject the dependency are often more disastrous than the acceptance of a dependency.

The patients were instructed in means of recognizing their own manifestations of accumulating emotional tension and encouraged (1) to accept them for what they represented and (2) to attempt to deal with the circumstances leading to their presence. When the patients learned to appreciate the origin of their symptoms, they often no longer looked on them as the manifestations of a dire disease. This later phenomenon in itself helped to alleviate anxiety.

Finally, rearrangement in the environment was attempted. When successful, it produced dramatic results in terms of symptomatic relief (case 3). Unfortunately, however, this was not always feasible, often because of the lack of a practical maneuver, lack of cooperation of the family, or because of the inability of the patient to accept any drastic change.

No medication was given to the patient. The management was worked out with the patient. The patient's ability to utilize his own resources determined the final result. The physician guided him, helped him understand why he was getting into difficulty, and supported him when he was trying to alter his environment or attitudes.

Time factors were of the greatest importance in this type of management. In many instances, in hospital circumstances, an apparently spontaneous recovery took place in two or three months, representing the therapeutic effect of the passage of time and of autonomous biological forces.

The passage of time in itself was often helpful in establishing the patient's confidence in his physician. The increase in confidence frequently alleviated inhibitions and reluctance to express feelings and attitudes. Moreover, an appreciation of the appropriate moment for introducing a new concept or challenging an established attitude was essential.

Thus it would have been unwise when the patient was disturbed or having severe symptoms to threaten his security system in anyway. Difficulties in the life situation were often anticipated so that interviews might be arranged to antedate an approaching unpleasant event, such as school examinations, the undertaking of a new position, or the approaching visit of an unwanted relative.

RESULTS

During this type of management 11 of the patients showed substantial improvement. Of these 11, four patients became free of symptoms and remained so for more than a year, one of these for three years. Two patients showed slight improvement over a year and a half. Six of the 19 patients did not improve. Of these six, one died and one has had an ileostomy. These results are compared with other published series in the table.

Evaluation of the Clinical Management of Chronic Ulcerative Colitis

		Results of Treatment in Terms of Control of Symptoms		
		Cases *		
Author	Number	With Good Control, %	With Fair Control, %	With Poor Control, %
Kiefer	327	34	12	54
Bargen	871	40	17	43 (17% dead)
Present series	19	56 (11 cases)	12 (2 cases)	32 (6 cases) (1 dead)

* Cases followed two years or more.

In the group there was no direct relationship between the patients' age, duration of illness, severity of illness, and extent of x-ray changes, and the patients' ability to recover from the illness, or to make a significant improvement.

In considering the features responsible for improvement or failure to improve in the patients studied, a number of facts became apparent which are illustrated in the following case reports.

Chronic ulcerative colitis occurred in a setting of intense unexpressed hostility. A basic alteration in attitudes by the patient was followed by diminution in hostility and disappearance of symptoms in three of the 19 patients. The following protocol describes the moderately severe ulcerative colitis which began in a 36-year-old woman in a setting of intense hostility toward her husband. During a series of 17 therapeutic interviews over a six-month period the patient was able to modify her attitudes and feelings toward her husband. This change corresponded with marked symptomatic improvement, and x-ray and sigmoidoscopic studies at the end of six months revealed no evidence of ulcerative colitis. She has been free of symptoms for three years (Fig. 1).

CASE 1.—A 36-year-old graduate nurse had ulcerative colitis with continuous symptoms for four years. When symptoms were very severe she had 12 to 24 bloody rectal discharges a day.

She married, at the age of 30, a man 15 years her senior, after having rejected many suitors. Her fantasy that her husband would be a "perfect" man was soon dispelled. He was responsible for the financial welfare of his two elderly parents. This took considerable time and money as the old people were demanding of his presence and affection as well as a financial drain. He spent much time with them. As time went on the patient began to feel that he cared less for her than for his parents, and that he had many ideas and notions quite different from hers. She "felt like leaving him many times," although she did

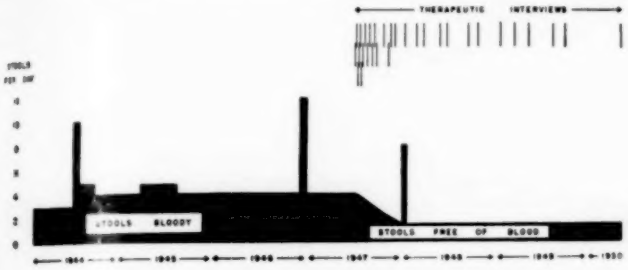

Fig. 1 (case 1).—Alteration in the course of chronic ulcerative colitis following institution of therapeutic interviews. Each short line represents one interview. The rapid decrease of the diarrhea and disappearance of blood from the stools can be noted. The patient continues to be free of symptoms even though she is being seen very infrequently. A marked change in behavior and attitudes was found to be associated with a rapid diminution in symptoms.

not, being afraid that she would be unable to support herself. In this situation of conflict she became more and more resentful toward him and became enraged at his slightest defect in behavior. However, she was unable to express any of this hostility, being concerned lest he leave her. She remained smiling, and no friend or acquaintance knew of the marital strife. As she became more and more uncertain of the wisdom of continuing the marriage, and bitter and resentful toward her husband, ulcerative colitis began insidiously four years before she came to the New York Hospital. She had been attended by several physicians and had had numerous diagnostic investigations.

At the time she presented herself to the hospital, sigmoidoscopic examination revealed an engorged, hyperemic, friable, ulcerated mucus membrane as far as 22 cm. up the bowel. X-ray examination revealed spasm and shortening of the descending and sigmoid colon. Repeated cultures of the stools for pathogenic organisms and amoebae were negative.

The patient was interviewed for a total of 26 hr. She was able to work out the dynamics of her behaviour and motivations and gradually became able to accept her husband and his faults and to make the best of the situation. She found her husband sympathetic toward her in regard to her attitude toward his parents, and that he was able to tolerate outbursts of anger on her part and give her understanding. After six months the sigmoidoscopic and x-ray examination showed no structural change and the subject was not passing blood or mucus through the rectum. It is probable that this woman will be able to deal with her personal affairs more adequately in the future and remain free of ulcerative colitis. After the first six months of therapy she was seen only once in three months. She has remained symptom-free for three years.

The opportunity to express feelings of anger and hostility to a sympathetic physician was found to be sufficient to diminish the intensity of such feelings. The tranquility brought about by a good physician-patient relationship was often found sufficient in itself to result in the disappearance of symptoms even in the absence of any basic alteration in attitudes. Diminution in symptoms occurred in 5 of the 19 patients associated with these phenomena. A 35-year-old woman, discussed in the following protocol, had had severe ulcerative colitis for four years. After the establishment of a good relationship with her physician, there was a prompt diminution in symptoms, and ultimately x-ray and sigmoidoscopic examination revealed no evidence of structural changes (Fig. 2).

Case 2.—A 35-year-old woman had had severe ulcerative colitis for four years prior to coming to the New York Hospital in May of 1947. Her early life in Puerto Rico was one of extreme poverty and parental rejection and domination. At 18 years she came to the United States to seek a more comfortable life. At 21 she married a passive, dependent, indecisive man, who thrust the entire burden of family responsibility on her shoulders. She worked hard keeping her home neat and clean, and supplemented her husband's inadequate salary by doing factory work. She experienced gradually increasing resentment toward her husband during the years of their married life, and began to feel that she was living the life of a "drudge," which she had tried to escape. In a setting of intense resentment toward her husband, and a feeling of desperation over having lost a job through no fault of her own, acute ulcerative colitis began. The bloody diarrhea continued with frequent acute exacerbations up to the time of hospitalization, during which time she would have 12 or more bloody rectal discharges daily. Examination at this time revealed a severely ulcerated, friable mucus membrane from the rectum to the sigmoid colon. Barium enema showed extensive changes consisting of ulceration and narrowing and shortening of the entire colon. Repeated stool cultures failed to reveal any amoebae or pathogenic bacilli. The Frei test was negative. In the hospital she had a protracted febrile course, receiving penicillin and sulphaguanidine without benefit. An ileostomy was considered advisable, but deferred until an attempt to deal with her personal problems had been made.

During the first two hours of interview, she was extremely reticent and unable to deal with questions concerning her personal life. When it was suggested that she simply recount her biography in her own way, however, she was able to talk more freely. Shortly thereafter she began to feel better. Her appetite improved and bowel movements were less frequent (Fig. 3). She was discharged from the hospital without operation early in August, 1947, and continued to visit the Outpatient Department. Despite her improvement there was little reason to think that it would be sufficiently sustained to lead to recovery. Moreover, her rigid attitudes and difficulty with introspection and communication made it seem unlikely that she would benefit from any therapy short of surgery. Nevertheless, by the latter part of November, 1947, sigmoidoscopic examination showed a normal colon and her symptoms had almost entirely disappeared. At that time she was having one or two loose bowel movements a day, but she passed no blood.

She said that since she had been treated with attention to her life problems and conflicts she felt generally better and more tolerant of her husband's lack of cooperation.

Over the period of the next 12 mo., during which she was visiting the clinic at frequent intervals, her symptomatic improvement was maintained. At the end of this period there were no symptoms of ulcerative colitis and she was having one or two normal bowel movements a day, without blood or mucus. The patient said that she was feeling calm and at peace, relatively relaxed, and better than she had ever felt before the onset of her illness. Her attitude toward her husband and her children was more tolerant. She continued to do her housework as carefully as ever, but did not drive herself as before. Temper outbursts continued, but she brooded much less. Now her general

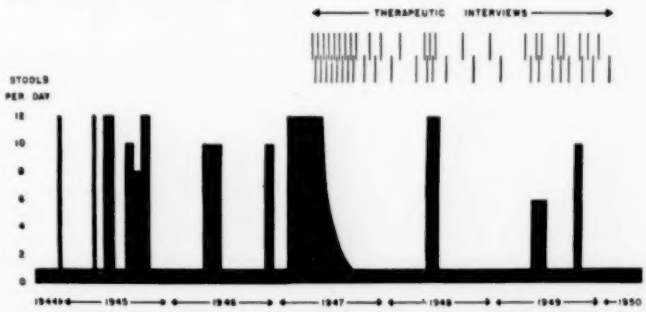

Fig. 2 (case 2).—After the establishment of a good physician-patient relationship through therapeutic interviews, the episodes of acute bloody diarrhea became less frequent and shorter in duration. There was no significant change in environment or attitudes of relatives. Each short line represents one interview.

aspect was more buoyant and cheerful, and her statements of improvement were more convincing. She was slowly learning to deal with herself, and the prognosis now seemed good.

During the first year she was free of symptoms, but during the second year of "follow-up" she had transient periods of bloody diarrhea in settings of mounting suppressed anger directed toward her children (Fig. 3).

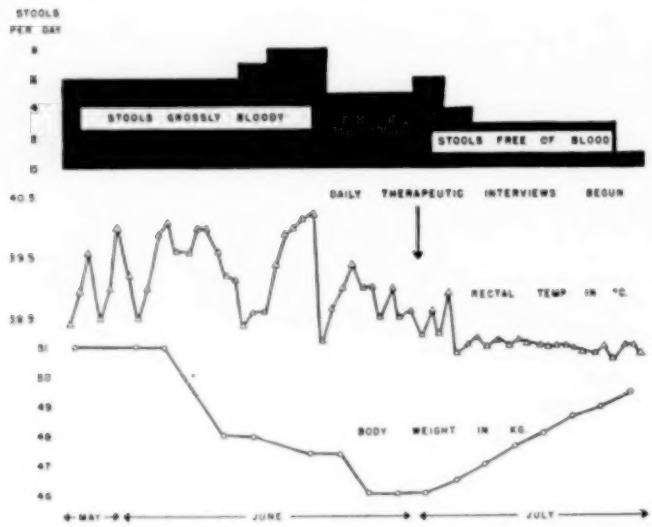

Fig. 3.—This diagram shows the hospital course of the patient described in case 2. After the institution of daily therapeutic interviews, there is a rapid diminution in the diarrhea and a disappearance of blood from the stools. At the same time a defervescence and a rapid gain in weight began.

A radical change in environment for the patient minimized the number of occasions which precipitated intense feelings of hostility. The subsequent calm and security resulting from the altered environment was found to bring about a striking reduction in symptoms without basic personality change. The following protocol describes this phenomenon in a 29-year-old woman in whom ulcerative colitis developed in an intolerable life situation. Major changes in the behavior of her husband and frequent removal of the patient from her environment resulted in feelings of calm and security and a rapid abatement of symptoms (Fig. 4). In three of the 19 patients radical changes in environment were associated with prompt diminution in symptoms.

CASE 3.—A 29-year-old white Spanish Jewish woman had ulcerative colitis of three years' duration. She was the youngest child of three. A remarkably overprotected child and adolescent, she was extremely dependent on her mother for affection and support. She was married at 19 to a man of her family's choice and immediately transferred her feelings of dependency to him. Her childlike fantasy of a strong, decisive, independent, affectionate and demonstrative male was not fulfilled in her husband. He was a dependent, unaggressive, shy, retiring, undemonstrative man who was devoted to his mother. The mother-in-law, in whose house they lived, disliked and openly criticized the patient in the presence of her husband. The husband made no effort to defend his wife, and the patient, although she became more and more resentful about the situation, said nothing. She remained smiling and cheerful in front of her husband and her family. As time went on she became fond of a brother-in-law who was kind to her, "took my part" and "told the mother-in-law off." She stated that "he was the only friend I ever had." This man died six years after the patient's marriage. Within two days of his death, the patient, in a setting of anxiety, fearfulness, increasing resentment toward her husband and mother-in-law, and in conflict as to whether to go home to her parents or remain in her unpleasant marriage, acquired acute ulcerative colitis. She said, "I felt alone in the world. I had no one to lean on." During the three years of her illness the symptoms were never absent, although for about four months of each year they were very mild. Approximately twice each year she had an acute exacerbation of symptoms lasting three to six months. Each episode was invariably precipitated by an argument with her mother-in-law, in which her husband "let her down." Each episode was characterized by conflict (whether to leave the husband or not), fear of losing her husband, anger and resentment toward the husband and his mother, and an inability to express her feelings. Each exacerbation of symptoms ceased when the patient would take a "vacation by myself" or the mother-in-law would spend the winter in Florida. When interviewed for the first time, she weighed 70 lb. (31.8 kg.) and was having a bowel movement almost hourly. Her temperature was 102 F. Sigmoidoscopic examination revealed an engorged, bleeding, ulcerated, friable spastic rectum and lower sigmoid. X-ray examination revealed spasm and shortening and ulceration in the entire large intestine. She was immediately hospitalized, ordered to remain in bed, and given a diet of her own choice. She poured out all of her wrath and indignation to her physician. The latter listened sympathetically and agreed with the patient's interpretation of her problems and supported her in complaints and bitter feelings. She was encouraged to be confident that she would recover and that steps would be taken to help solve her problems. On the fourth hospital day she was informed that her mother would come to live with her when she left the hospital and that her father was making plans to provide a vacation for her. She was also told that her husband was being attended by the physician. Within 24 hr. her bowel movements decreased from 10 to three per day and the fever ceased (Fig. 5). She said she felt that the hospital and the physician "were my friends." Except for a mild exacerbation following a visit from her mother-in-law, the improvement persisted. She was discharged in three weeks.

During the year following, the husband had "spoken to" his mother in the patient's presence, and the mother-in-law did not "bother" her as much. Her mother remained with her for six weeks. In the following year the patient was seen for 25 one-hour visits, during which time an attempt was made to help her see and understand her behavior and become a more independent, self-sufficient person. At the end of a year and a half she was entirely symptomless for eight months and weighed 104 lb. (47 kg.). Sigmoidoscopic examination revealed no abnormality, and the x-ray findings indicated less spasm and ulceration of the colon.

The ability of a patient to participate in a constructive physician-patient relationship was found to be related to the dwindling of symptoms and, inversely, failure to do

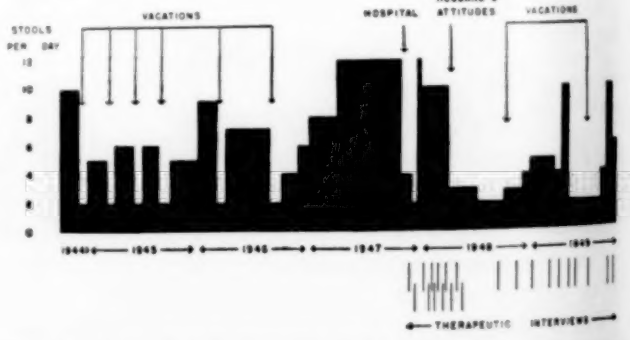

Fig. 4 (case 3).—Periods of removal of the patient from her environment corresponded with periods of freedom of symptoms. A radical change in environment or in the attitudes of relatives is often adequate to remove the occasions of anger and hostility and to diminish symptoms.

so was associated with persistence of colitis. The following protocol describes a 36-year-old woman who had ulcerative colitis for three years. She was able to discuss only certain less troublesome facets of her personal problems. She changed her behavior but little. The symptoms diminished slightly, but she had episodes of bloody diarrhea of about the same frequency and severity as

before the interviews were begun. Six patients of the 19 were unable to participate fully in the therapeutic relationship. Of these, four showed no change in symptoms and two improved only slightly.

CASE 4.—A woman, aged 35, had mild symptoms of ulcerative colitis continuously for three years, having four to six bloody rectal discharges a day. She was an exceptionally rigid, compul-

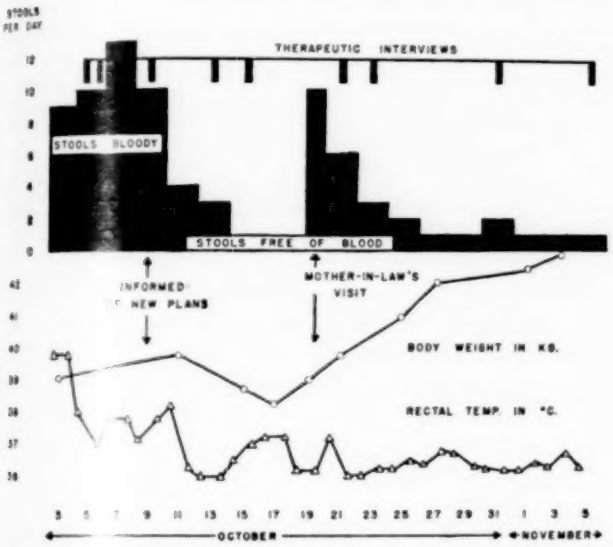

Fig. 5 (case 4).—Rapid decrease in diarrhea, fall in temperature, and weight gain following the presentation to the patient of a plan for a solution of her problems. There was a mild exacerbation during and following humiliation associated with a visit from her mother-in-law.

sive person. Indecisiveness, dependency, and inability to ventilate or act out aggressive feelings, and a vicious temper were the outstanding personality features. She said "If I didn't have such a bad temper I wouldn't have this disease." Ulcerative colitis began in a setting of increasing anxiety over caring for a newborn infant, conflict and resentment toward her mother-in-law who had moved into her home, and increasing anxiety and resentment over being unable to procure a sufficient variety of foods during the war even though she shopped for at least four hours every day. Sigmoidoscopic and x-ray examinations revealed moderate structural changes indicative of ulcerative colitis in the rectum and sigmoid area. Repeated examinations of the stools were negative for pathogenic organisms.

She has been interviewed for a total of 22 hr. over a year and a half. Although there was some improvement, she continues to have episodes of acute bloody diarrhea. Each of these exacerbations has been precipitated by situations which place her as the center of responsibility in dealing with a sick child or an irate mother-in-law. At such times she gets little or no help from her husband, who withdraws from the scene.

The patient has not taken full advantage of all of the potentialities of the therapeutic relationship and has made only feeble attempts to understand and to help herself. There are still many facets of her life which she refuses to discuss. The slight improvement which has been seen is probably attributable to the improvement in the environment; that is, the child has grown older and is less difficult to deal with, and, the war being over, shopping is easier.

When the patient was unable to give up an unworkable behavior pattern and an excessively costly set of values the clinical course was protracted. This phenomenon was seen in two patients. The protocol of one of these is given below (Fig. 6).

CASE 5.—A 20-year-old white man had been ill with ulcerative colitis for one year and usually had eight to 10 bloody bowel movements per day. He was a tall youth, had a large skeletal frame, and was heavily muscled. Except for clubbing of the fingers and toes and a small perirectal abscess, the physical examination was unremarkable. X-ray pictures taken after barium enema showed narrowing and spasticity of the descending and sigmoid colon. In addition, there was extensive destruction of the mucus membrane and ulceration in this same area. There was a constant narrowing of the sigmoid colon. Sigmoidoscopic examination revealed marked hyperemia, engorgement and fragility. There were numerous petechial lesions and tiny shallow ulcerations throughout the rectum. Intense spasm at the rectosigmoid region prevented further passage of the instrument. Repeated examinations of the stools failed to reveal pathogenic organisms.

The patient was the first of two children of American-born Catholic parents of Irish stock. His mother was overprotective and oversolicitous but had little ability to demonstrate feelings of warmth and affection toward her children. She was the dominant figure in the household, made the important decisions, and handled the money. She repeatedly indicated that her husband was a poor provider and hinted that she expected help from her sons as they grew older. After the patient's illness began, she prepared his meals, rigidly adhering to a prescribed diet, spending extra money for special foods and berating him when he did not eat them.

The patient's father, a laborer, was described as "easy-going," "nothing bothers him," "doesn't care about anything." He had no particular hobbies or interests and was content to "sit around the house and do nothing."

The patient's brother was "easy-going" like the father. The patient looked on both the father and brother with scorn.

Because of "feeding difficulties" and vomiting in infancy and because the mother was working to supplement the family income, the patient spent most of his first year of life in a Catholic orphanage. After this he lived at home. Except for the common diseases of childhood, he was healthy until his first and second years of grammar school, when he suffered from many attacks of vomiting and lost so much time from school he had to repeat a year. These years corresponded to his brother's first and second years of life. The patient did poorly all through grammar school and played "hookey" frequently. He was an angry child, known to be "bad-tempered" and engaged in many street fights. Although he never "picked a fight," he had a "chip on his shoulder" and never avoided a fight. He was known as a "rowdy" and troublemaker in the neighborhood, and most of the children were afraid of him because he frequently struck them. He got along poorly with his younger brother, considered him a "nuis-

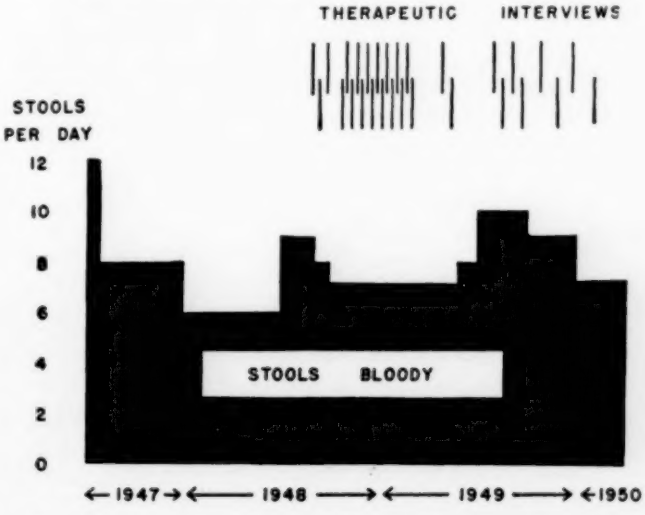

Fig. 6 (case 5).—Severe symptoms continue in this 20-year-old man, who was unable to utilize his understanding of himself in altering his behavior. The inability to alter one's behavior or to give up an unworkable set of values is associated with a protracted course.

ance" and a "pest," and would often strike him. He was "very close" to his mother and saved most of his spending money to buy her presents.

The brother, when going to school, was a "good boy," obedient and quiet, receiving good grades. The family prodded the patient with these facts and "teased" him, indicating that his brother might "pass" him in school. He was frequently told that he should be "more like his brother." The patient said he wanted people to like him, but he was always getting into fights and

into various kinds of trouble for breaking windows and for street-fighting. Once, a boy who had been "beaten up" by the patient struck his head on a curbstone and "almost died." Toward the end of his grammar school experience and the first year of high school, a change took place in the patient. He stopped fistfighting and began to try to win approval from his parents and his friends by "being nice." He attributed this change to being afraid of hurting someone while fighting, or latterly, of getting hurt himself. He began to study hard in school to "beat his brother" and to "make up" the year of lost school work. He took a job after school hours to "make money" to buy things for the house and for his mother.

In his third year of high school he pushed himself exceptionally hard in order "to make the four year course in three and one-half years." He resented his school work, felt that it was "wasted time," "gets me nowhere" and only put off the time when he could get a "steady job." He "hated it," yet he forced himself to do the school work. At the same time his part-time job continued. He saved enough money to buy an electric refrigerator for his mother. She accepted this gift "as a matter of course," thanked him for it, but did not extend the amount of gratitude and affection he anticipated. His father barely noticed it. He became bitterly resentful toward them, but said nothing. A short time later he was to take his final school examinations. In this setting of increasing anxiety, anger, and resentment toward his family over the humiliating gift episode, and his failure to win overt manifestations of their approval, he began to notice loose, watery diarrhea, which in a few weeks became bloody. In spite of this illness he finished his high-school work, graduated as he had planned at the end of three and one-half years, and went to work as an assistant printer. During the ensuing year his symptoms continued, the patient having eight to 10 loose watery bowel movements, usually containing blood and mucus. After a slight exacerbation of his complaints and the development of a perirectal abscess, he was admitted to the hospital for study.

He was usually smiling and pleasant. He said that he never showed his feelings, saying "People don't like you if you're mean." Although he was aware of a strong quick temper, he never allowed it to show itself, covering it up with smiling. He likewise had difficulty in showing feelings of love and warmth. "Little things," such as losing a bowling match, or being "out smarted" by his companions in an exchange of "wisecracks," would precipitate rage in him. He saved his money meticulously so he could buy his mother more gifts, and, indeed, purchased a new rug and kitchen flooring the following year. He wanted to be "top man" in anything he did. He felt that he had to be the best in bowling, baseball, earning capacity, money saved, and "fancy" clothes. If one of his friends said he had slept for twelve hours, the patient would "top" him by saying he had slept for thirteen hours. When defeated in bowling, he would be angry and "sulk" for hours. In spite of this competitive feeling he was not a leader in his group. He did "anything the rest were going to do." He avoided any circumstances which might put him in an embarrassing or humiliating situation. Although he wanted to learn to drive an automobile, he never accepted his friend's offer to teach him as he felt the friend would "laugh at him" while he was learning. The patient was fastidious about his personal belongings. "Anything out of place drove me mad." He had a strong drive to have possession of "things." He wanted "clothes," a television set, a car, and a bank account. "Everything I saw I wanted." He wanted to work seven days per week, so he could earn more money. Weekends he felt were a waste of time. Although he was friendly and affable at his work, he was "grouchy" and "unstable" at home. His mother said he was always "crabbing" about something. If the food displeased him, he refused to eat it. He always seemed to "get up on the wrong side of the bed." Fear of displeasing others or of being "criticized" haunted him continuously.

He denied masturbation and had very few "dates," and these only when the whole "gang" went out. Girls were a "waste of time" and only made you "spend your money." Money and a bank account represented the only kind of security he knew. He wished never to "be like my old man, without a dime." He desired to earn enough money before he was 30 so that he could "retire." For a time he entertained the idea of taking a civil service job which didn't pay much but had a good pension.

This young man was interviewed for a total of 26 hr. over one year's time, during which period he worked daily. No medication was given except small amounts of ferrous sulfate, vitamin supplement and 30 mg. of phenobarbital sodium daily. The interviews revealed that he was aware that anger and anxiety were associated with exacerbations of his symptoms. He knew he was more prone to anger and was much more "sensitive" than his fellows. His competitive attitudes toward associates were linked by him to his attitudes toward his brother and father. He was unable to utilize this information in altering his daily behavior. As he said, he did "the same things over and over again." He experienced the same humiliations and frustrations in dealing with his acquaintances, and in his work. The diarrhea, consisting of 8 to 10 bowel movements a day, continued as did the passage of blood. The x-ray and sigmoidoscopic pictures did not change.

COMMENT

Comparison of this unselected group of patients with other series of patients with ulcerative colitis shows essentially the same sex and age group distribution.[11] Thorough diagnostic procedures on all the patients were carried out by us, and at other hospitals, to verify the diagnosis of chronic, nonspecific ulcerative colitis. The course of the disease prior to the institution of our therapy was entirely compatible with such a diagnosis. In each patient the onset of the disease and each of its exacerbations coincided with periods of stressful life circumstances.

The patients were extremely dependent on the approval of others. They were uneasy and anxious in the presence of angry individuals and demanded an unending show of love and affection from their parents and spouses. They needed to be "nice to everyone," and to be on good terms with everyone; otherwise they became anxious and tense. They "did things they didn't want to do" in order to placate and to keep the peace. These peace-making attitudes made it appear that these were persons of even-temper and serenity, a misconception sometimes reinforced by a "beatific" or "angelic" look.

The overdependence, the inability to tolerate hostility in others, or to express or to act out their own hostility, the inability to make decisions, the passivity, the ever-present fear of losing the good opinion of others, made for ever-increasing conflict. In the face of such a combination of oversensitivity, passivity, indecisiveness, dependency, and hostility it was extremely difficult for any one of them ever to satisfy his dreams, desires and ambitions. Hence, they were frequently frustrated and humiliated, which made them react with anger and resentfulness. The conflict arising from desire to act out or verbalize their hostility and fear of the consequences of such action precipitated in them anxiety and an exacerbation of symptoms. In brief, the patients were hostile but "sweet," anxious but "calm," timid yet rebellious. They had aggressive fantasies, but their behavior was passive.

They experienced strong feelings of guilt over their hostility, and often felt unworthy of others' love because of their anger and resentment. The guilt was felt most often in relation to either their parents or spouses. This guilt, making them feel unworthy, also made them fear the loss of the love of the person involved and made for more anxiety.

A series of features have been indicated which determine the prognosis, and have little or nothing to do with the age of the patient, the duration of the disease, or its extent. For example, case 1 was older, and had been ill

11. Bargen.[1a] Bockus.[6]

for a greater length of time than case 5, yet the younger patient followed a protracted clinical course without improvement.

Prugh [12] has shown that recovery has occurred in children with ulcerative colitis when they were able to display overtly aggressive behavior. In our own patients, when it was possible, such expressiveness appeared to have a salutary effect. In any case, it seems clear that satisfactory treatment of this disorder requires detailed attention to the patient's total life adjustment.

Measures, such as careful and meticulous attention to complaints, frequent examinations, diet regulation, institution of new medications, and a solicitous attitude on the part of the physician, are frequently effective in alleviating symptoms. Such measures are probably effective only inasmuch as they establish a good physician-patient relationship.

Comparison of the results of treatment in this series of patients with previously reported series,[13] indicates that the method used here is as effective as other methods. This suggests that the therapeutic factors operating in other reported series are similar to those described in this study

SUMMARY AND CONCLUSIONS

A series of 19 unselected patients with chronic ulcerative colitis has been presented and compared with similar series in the literature in regard to therapeutic results. Eleven patients were considerably improved, two slightly improved, and six were unimproved.

Ulcerative colitis was viewed as a stress disorder. A variety of therapeutic measures designed to alleviate this stress were used and found to be effective in approximately the same proportion of patients reported by others, using ostensibly different methods. This suggests that the therapeutic factors operating in other reported series are similar to those described in this study.

A constructive physician-patient relationship was of the greatest benefit to the patient, and favorable results in treatment were not obtained without it.

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JAUNDICE IN ACUTE SUBLEUKEMIC LYMPHOCYTIC LEUKEMIA DUE TO OBSTRUCTION OF THE COMMON DUCT BY PORTAL NODES

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The object of this report is to call attention to a case of severe jaundice that resulted from an unusual obstruction of the common bile duct by enlarged portal lymph nodes. Jaundice due to obstruction of the common bile duct by portal lymph nodes has been frequently mentioned but seldom seen.

REPORT OF A CASE

A white truck driver, 29, was admitted on April 12, 1950, complaining of a swelling in the right side of the neck for 10 days. He was in excellent health until three months prior to admission, at which time there was gradual onset of pain in the chest and back. This was described as a constant, dull, aching pain across the anterior part of the right side of the chest and a constant, dull, aching pain in the right lumbar region. The pain was not aggravated by respiration or motion. He had general malaise, lassitude, and anorexia and had lost 15 pounds. In spite of this symptomatology, he continued working. Two months prior to admission a cough developed which occurred in severe paroxysms. He raised about one-half cup of mucoid sputum daily. Ten days prior to admission a throbbing developed in the right side of the neck. This persisted; then five days prior to admission, he felt a rather severe pain radiating down the posterior aspect of the right arm.

On admission, physical examination revealed a well-developed, well-nourished, robust, white man who did not appear to be acutely or chronically ill. The right anterior cervical nodes were enlarged and palpable, these being hard and matted together. The complete mass of nodes was 8 cm. in diameter and protruded 2 cm. externally. The skin over this area was tight, and there was slight tenderness on deep pressure over this area. The pharynx was moderately injected. By percussion, it was thought that the diaphragm was immobile on the right side, and this was confirmed by fluoroscopy. The percussion note was flat over the right base, and the breath sounds were absent. Tactile and vocal fremitus were impaired at the right base. There was a pronounced sensation of fulness on palpation of the right side of the abdomen; however, the liver edge could not be felt.

The red blood count on admission was 4,1500,000 with hemoglobin of 15 gm. The white blood count was 7,950 with 50% neutrophils, 49% lymphocytes, and 1% monocytes. In a subsequent differential the pathologist identified some of the cells of the lymphocytic series as being lymphoblasts. Subsequent differential counts showed a steady increase from 36% lymphoblasts to 100% lymphoblasts in the terminal stage. The red cell count dropped from 4,150,000 to 3,139,000 with hemoglobin of 10 gm. On four different occasions, fluid was removed from the right pleural cavity, the quantity varying from 500 cc. to 2,500 cc. The pleural fluid had a specific gravity of 1.017 with a white cell count of 12,000, 75% of these being polymorphonuclear leucocytes and 25% of these being lymphocytes; some of the latter were lymphoblasts. The total protein of the pleural fluid was 3.43 gm. The sternal bone marrow was hypercellular with 88% prolymphocytes. Roentgenograms of the chest showed a large homogenous mediastinal mass and pleural effusion on the right.

Shortly after admission, what appeared to be a superior vena cava syndrome developed. He became cyanotic, and the vessels of the neck became engorged. There was pitting edema of the chest anteriorly, and the superficial vessels of the upper abdomen and the lower chest wall became dilated. The venous pressure was 32 cm. of water, and the circulation time was 17 seconds with the use of magnesium sulfate. During hospitalization, he maintained a temperature of 101 to 102 F. and had a daily peak of 103 to 104 F. The bone marrow studies confirmed the diagnosis of acute subleukemic lymphocytic leukemia. With the realization that it would have no beneficial effect on the disease, but in an attempt to relieve the distressing symptoms of the superior vena cava syndrome, roentgen therapy was begun, 50 r

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and 100 r being applied to the anterior midchest on two successive days. This was discontinued in view of the rapidly progressive disease and the lowering of the white blood count. The superior vena cava syndrome progressed rapidly. He coughed almost constantly and was dyspneic at all times. The second day after roentgen therapy, the white blood count dropped to 3,000 with 95% lymphoblasts and then gradually decreased until on the day of death the white blood count was 1,000 with 95% lymphoblasts. One week before death, he suddenly became jaundiced. The serum bilirubin was 3.75 mg. per 100 cc. as contrasted to serum bilirubin of 0.9 mg. per 100 cc. at the time of admission. He became severely jaundiced with reddish brown urine and acholic stools. Cephalin flocculation was 4+. Two days before death he showed a distinct bleeding tendency in the gums and nasal mucosa. He died 35 days after admission.

At post-mortem examination the right thoracic cavity contained 200 cc. of clear yellow fluid. The right lung was completely collapsed and airless. The edge of the liver extended to the level of the iliac crest. The left lung weighed 650 gm., and increased resistance was offered to the cutting edge. The cut surface had a smooth yellowish appearance. The consistency was less spongy and alveolar markings were less pronounced than

Photograph showing large bronchial nodes and adjacent leukemic infiltrate.

normal. The right lung weighed 650 gm. It was compressed and airless. The anterior angle of the lung was thickened and cord-like. This entire lung was completely atelectatic. There was infiltration by a yellowish, thick, firm, homogenous material extending around the entire periphery of the compressed lung, making it almost unrecognizable as being lung tissue (figure). This homogenous material covered the entire pleural surface of the right lung. Some of this cord-like material was nodular in character. The spleen weighed 200 gm., and macroscopic examination showed no significant abnormalities. The liver was firm, swollen, and enlarged. It weighed 3,100 gm. The cut surface was homogenous with the central vein area being slightly more pronounced. A perilobular infiltration of this yellow firm material could be seen, giving the entire cut surface a yellowish color. There was tremendous dilatation of the common duct in the proximal two-thirds. The diameter of this saccular dilatation was 2 cm., and the thumb could be placed within the lumen. In the lower third portion the common duct was completely occluded by pressure from adjacent, large, firm, yellow, portal nodes. Between the nodes, there was a yellow, firm infiltrate. Extreme pressure on the gallbladder would not cause bile to flow from the common duct to the duodenum. After the dilated common duct was opened, pressure on the gallbladder caused white inspissated bile to exude from the cystic duct into the common duct. The kidneys were swollen, weighing 250 gm. (left) and 200 gm. (right). The capsule was stripped with ease, and the surface was smooth. Numerous nodes were in the mesentery, which was extremely thickened. A yellow, firm, hard, infiltrate permeated the mesentery.

On microscopic section, the left lung had alveoli which were thickened by a cellular infiltrate varying in extent from area to area. The cells were large and round with pale vascular nuclei resembling those seen in section through the lymph nodes and various areas of cellular infiltration. Numerous areas of hemorrhagic extravasation were present where the alveoli were completely filled with red cells. Microscopic section through the right lung could hardly be identified as lung tissue. In some areas, however, the alveoli were compressed, having lost their lumina. In most areas the tissue was unrecognizable, being composed of a mass of cells, chiefly large mononuclears, which had a very small amount of cytoplasm, large vesicular nuclei, very heavy chromatin networks, clear-cut nuclear membrane, and occasionally large nucleoli. Numerous red cells were interspersed among the white cells, and mature lymphocytes were present in small numbers. The bronchioles were compressed and had virtually lost their lumina.

The pericardium showed very sparse, although in some cases more focal and pronounced, infiltrate of cells resembling those described in the lung.

The hematopoietic elements in the marrow were virtually replaced by a single type of cell, a large lymphocyte similar to those previously described. Small lymphocytes were present also, and there was a sprinkling of red cells between them. The cells were not closely packed. The blood sinuses were virtually empty, only a few red and white cell precursors being seen. This implied failure of delivery of the white cells into circulation and explained the paucity of cells in the peripheral blood.

The lymph node structures were completely obliterated by a mass of large mononuclears, similar to those previously described in the lungs. Some of the nuclei, however, were not completely round but were somewhat bizarre or spindle shaped. Numerous areas of hemorrhagic extravasation were present. A thin fibrous reticulum could be seen ramifying among groups of cells. There was little or no involvement of the spleen by leukemic cells which were to be seen only in the blood vessels. The splenic pulp itself appeared normal except for dilated sinusoids, and the architecture was not obliterated. The malpigian corpuscles were fairly normal in size and number. In the small intestines in certain areas the villi were necrotic, and the mucosa and submucosa were richly infiltrated with a dense mass of lymphocytes. These were mainly small lymphocytes and did not appear to be of the lymphoblastic type seen in other organs and in the infiltrated areas. The extent, however, was much greater than that observed in Peyer's patches. There were no significant abnormalities seen in the kidneys except for several areas of interstitial infiltration with cells resembling those previously described, these being just under the renal capsule.

COMMENT

Obstruction of the common bile duct by enlarged portal nodes is uncommon. When it does occur, it is nearly always caused by tuberculosis, Hodgkin's disease, or lymphadenitis.[1] Obstructive jaundice due to enlarged portal lymph nodes caused by leukemia is extremely rare.[2]

SUMMARY

A case of acute subleukemic leukemia is presented which shows several interesting and unusual features: (1) leukemia with a normal white cell count at admission; (2) leukopenia during nearly all the hospital course; (3) superior vena cava syndrome, and (4) jaundice due to obstruction of the common bile duct by enlarged portal nodes, with tremendous dilatation of the common duct.

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PULMONARY CHANGES FOLLOWING CHOLECYSTECTOMY

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The incidence of pulmonary complications following abdominal surgery has long been a matter of concern to the physician and patient. Although scores of manuscripts have been written about various phases of the subject, no single work was found which described the clinical and roentgenologic changes following cholecystectomy. It was our impression that these were of sufficient significance to warrant investigation. This study was thus undertaken with a hope of obtaining data which might be of practical importance.

A review of the related literature over a period of 20 years was undertaken. It revealed certain pertinent information. In an analysis of 23,000 general surgical cases, Eliason and McLaughlin [1] reported an incidence of 1.38% of postoperative pulmonary complications. Taylor and his co-workers [2] reported 1.2% of lung abnormalities in a series of 12,349 cases. King [3] in 1933 stated that between 35 and 46% of patients undergoing surgery of the stomach, duodenum, and biliary tract showed signs of bronchitis, pneumonitis, and atelectasis. That same year Prinzmetal and others [4] stressed the importance of pulmonary subventilation after surgery in the upper abdomen and discussed the mechanisms involved. Faulconer and his associates [5] found that in about 8% of patients having operations on the upper urinary tract, atelectasis developed in the contralateral lung. They felt that this was owing to the lateral position the patient assumed during operation. It was their impression, also, that the method of anesthesia did not materially affect the end results. Stringer,[6] in a series of 55 patients on whom partial gastrectomy had been done, noted that 26 showed abnormal postoperative roentgenologic signs. Of the latter number, 13 had signs of lobular, partial, or massive atelectasis. He x-rayed these individuals in the supine position immediately, four, and 24 hr. after operation. No signs were noted in the immediate postoperative films, but roentgenologic changes appeared in some in four hours and in others in 24 hr. Other pathological changes noted were interpreted as bronchopneumonia, bronchitis, and collapse with effusion.

Recently, two significant works on this general subject made their appearance. In the first, Dripps and Deming [7] reported the rate of occurrence of postoperative atelectasis and pneumonia in two series of cases in which upper abdominal operations had been performed. In the earlier group of 250 patients they found the incidence to be 11% for subjects receiving inhalation anesthesia and only 4.2% in those given spinal anesthesia. The later group consisted of 900 patients. These were subjected to all precautions in order to avoid postoperative pulmonary complications. The incidence in those given spinal anesthesia remained essentially unchanged, whereas after inhalation anesthesia the rate decreased to 4.1%. The use of narcotics was kept to a minimum; codeine was used for the relief of pain; the use of abdominal binders was avoided, and small amounts of adhesive and light gauze dressings were used. Other precautionary measures included early mobilization, suction of the nasopharynx, and prophylactic antibiotics. Local nerve blocks were employed to relieve pain and allow for greater respiratory movements. They concluded that, unless a meticulous and comprehensive preventative program was followed, regional and spinal anesthesia are preferable from the standpoint of pulmonary complications.

The second paper, by Swank and Smedal,[8] presented a study of pulmonary atelectasis in stuporous states. They observed pulmonary atelectasis, bronchopneumonia, and related phenomena during continuous deep amobarbital (amytal®) sodium narcosis in young soldiers and found the incidence to be as high as 65%. They x-rayed the chests in the supine position and found that the lesions disappeared within from a few to 24 hr. Aside from the temporary nature of the roentgenologic changes, they felt that these changes could easily have been confused with atypical pneumonia.

MATERIAL AND METHOD

The clinical material consisted of 40 consecutive patients who were to have cholecystectomies only. These individuals were drawn from the ward and private services of six different surgeons and included several age groups. All roentgenograms of the chest were taken with the patients in the upright position and at a target distance of 2 m. The technique was standardized so that films of comparable densities were obtained. The roentgenograms were taken within 24 hr. before operation, on aproximately the fourth postoperative day, and at the time of the patient's discharge from the hospital. In addition to the x-ray studies, certain other pertinent data were recorded. These included the patients' age and sex, type of habitus, history of previous pulmonary infections, methods of anesthesia, and duration of operation. The clinical course and degree of ambulation in the postoperative period were especially noted.

From the Department of Medicine, Roentgenology and Surgery, Yonkers General Hospital; Attending Physician (Dr. Rudnikoff) and Director of Roentgenology (Dr. Headland). Several members of the surgical staff cooperated in this study.

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FINDINGS

Of the 40 patients included, 30 were women and 10 were men. Of these, 37 received a combination of nitrous oxide, ether, and oxygen, with or without thiopental

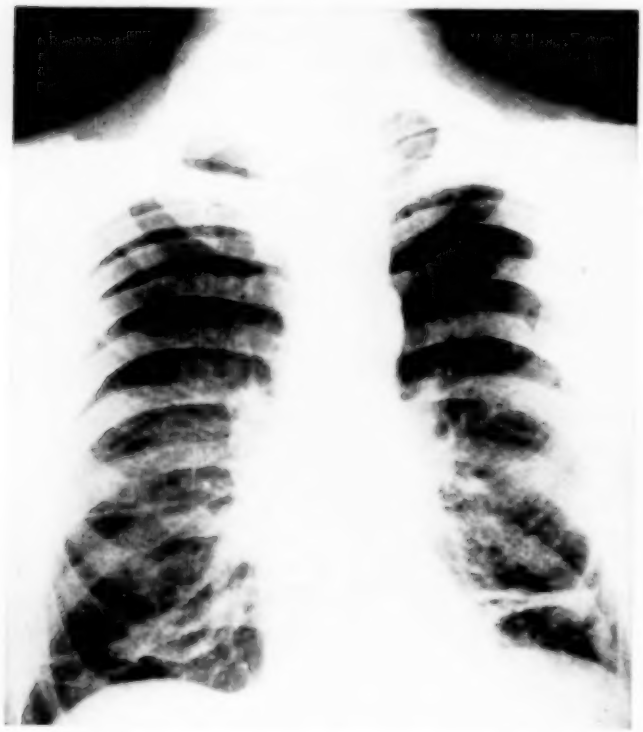

Fig. 1.—Illustration of platelike atelectasis.

Fig. 2.—Illustration of extensive atelectasis.

(pentothal®) sodium for induction; and three were given spinal anesthesia. The time for operation varied from 35 min. to three hours, with an average of one hour and 10 min. All patients were taken out of bed between the second and sixth postoperative day, the mean here being 3½ days. Discharge from the hospital usually took place between the eighth and 12th days.

Roentgenograms of the chest before operation were normal in all the 40 patients. On the fourth postoperative day, 28 of these, or 70%, showed changes, not previously present, in the roentgen appearances. These were interpreted as platelike atelectases, patchy or extensive atelectases, or bronchopneumonias. These three types are illustrated in Figures 1, 2, and 3. It was further noted that the lesions occurred bilaterally and either on the right or left side. The former predominated in a ratio of 3 to 2.

Although 28 patients showed deviations from the normal in their postoperative x-rays, 10 (37%) of these (or 25% of the entire series) exhibited symptoms and signs of sufficient clinical significance to require additional treatment. The importance of the roentgenograms

Fig. 3.—Illustration of pneumonic infiltrations.

at the time of discharge was demonstrated adequately when such observations revealed that seven patients showed residual atelectases or pulmonary infiltrations on the day they left the hospital. The only death resulted from massive pulmonary embolism. An analysis and summary of these data are presented in the table. The relationship of sex to incidence is not shown because seven of 10 male patients and 21 of 30 female patients (both 70%) showed postoperative roentgenologic changes in the lungs.

COMMENT

It is difficult and at times hazardous to evaluate and interpret changes which occur in roentgenograms of the chest taken after operation. The importance of the postoperative interval in relation to pulmonary findings cannot be overemphasized. It has been our impression and experience that almost 90% of patients undergoing surgery in the upper abdomen will exhibit pulmonary signs in the first 24 hr. following the operation. Physical

findings during this period include diminished breath sounds at the lung bases, elevated diaphragms, and showers of moist, crepitant, and sonorous rales. Roentgenograms taken during this time usually reveal diminished aeration of the bases of the lungs, symmetrical or asymmetrical elevation of the diaphragms, and atelectasis. Many of these findings are transitory and tend to disappear within the first 24 hr. For these reasons, the authors felt that every effort should be made to eliminate these purely evanescent manifestations. In this way, the lesions which appeared in the lungs would have greater clinical significance. It was felt that this could be accomplished by avoiding the use of roentgenograms made in the supine position or by portable x-ray apparatus, and by delaying such studies until the fourth postoperative day and at the time of discharge.

The various types of lesions which were observed in either or both lungs roentgenographically were, at times, difficult to interpret with accuracy. Some suggested bronchopneumonia; others, different degrees of atelectasis. This situation served again to emphasize the great need for a standard nomenclature in reference to the roentgenologic interpretation of atelectasis and pneumonia. The frequent appearance of linear shadows at

TABLE 1.—*Analysis of Data*

Age Group	No. of Cases	Positive Post-operative X-Rays	Significant Pulmonary Morbidity	Residual Lung Findings at Discharge
10-19	1	1	..	..
20-29	2	1	..	..
30-39	3	2	..	..
40-49	10	4	2	2
50-59	15	12	6	4
60-69	7	6	2	1
70-79	2	2	..	..
Total	40	28 * or 70%	10	7

* Sixteen patients had bronchopneumonia, and 17 had atelectasis (five had both).

the bases of the lungs were of considerable interest. These platelike or disklike atelectases were first described by Fleischner in 1936.[9] He attributed them to restrictions in respiratory excursions and plugging of the smaller bronchiolar radicles with tenacious mucus. He noted their occurrence during and after upper abdominal disease or operations, in contusions of the chest wall, and in other states in which motions of the thoracic cage were interfered with. Actually such areas of atelectasis are the result of physical and mechanical phenomena.

There has been a tendency on the part of some roentgenologists to minimize the importance of platelike atelectases and to suggest that they have little clinical significance. Other authors,[10] however, have emphasized their significance not only because they may be a source of spreading atelectasis but also because of the possibility of superimposed complicating infections in such areas. At least one case [11] was recorded wherein the diagnosis of platelike atelectasis was made, which subsequently proved to be linear metastases. Further emphasis on the latter point of view was made by Fleischner, Hampton, and Castleman.[12] They described these and other lesions in a thorough study correlating roentgenographic and microscopic findings. In discussing the differential diagnoses of linear and band-shaped shadows in the lungs, they included interlobar pleurisy, atelectases, healed infarcts, and scarring from old destructive lesions. It was their opinion that many of these are so similar in appearance as to prevent differentiation by the roentgenologist.

Our studies have indicated that the incidence of pulmonary complications as seen roentgenographically after cholecystectomy, and probably other operations in the upper abdomen, is higher than has previously been reported in the literature. The presence of residual abnormalities in the lung roentgenograms in a moderate number of patients at the time of discharge is, we believe, of considerable significance. It would be of interest to study a large series of such postoperative cases in this respect. It might offer some explanation for the prolonged period of debility in some persons.

While it is difficult to translate roentgenologic findings into clinical syndromes, it must be stressed that as long as abnormalities are found in the postoperative chest roentgenograms, potential sources of spreading atelectasis and superimposed infections exist. It is of considerable importance, therefore, to exercise every meticulous precaution during the postoperative period. It is desirable to avoid excessive sedation and narcosis before and after operation. Restrictive dressings and covers serve only to interfere with the normal excursions of the chest wall. Dehydration, because it causes bronchial secretions to become thicker and more tenacious, must be overcome quickly. Finally, the need for early mobilization whenever possible must be recognized.

SUMMARY

The postoperative pulmonary findings in 40 consecutive patients undergoing cholecystectomy are presented. The clinical and roentgenologic implications are discussed, and the relevant literature is reviewed.

27 Ludlow St.

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11. Oppenheimer, A.: Disc-like Atelectasis: Supplementary Note, Radiology **36**: 626-627 (May) 1941.

12. Fleischner, F.; Hampton, A. O., and Castleman, B.: Linear Shadows in the Lung (Interlobar Pleuritis, Atelectasis and Healed Infarction), Am. J. Roentgenol. **46**: 610-618 (Nov.) 1941.

Significance of Personal Problems.—There are two sides to the doctor-patient relationship. Not only must the patient feel confident of the doctor's desire and ability to help him, but the doctor must feel a sincere interest in the patient as a person and in his problems. This interest must be sufficiently deep to be sustained over long periods and to create a determination to see the patient through his troubles without passing judgment or feeling resentment in regard to behavior involving ethical or moral questions, and without being disturbed by unattractive traits of personality.—G. Canby Robinson, M.D., The Significance of Personal Problems in the Understanding and Treatment of Illness, *Bull. Johns Hopkins Hosp.* April, 1951.

ANTICOAGULANTS IN ACUTE FROSTBITE

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and
Frederick J. Wahl, M.D., Chicago

The treatment of acute frostbite has been advanced greatly by experimental investigations [1] on the pathologic physiology of this injury during the last war. This work was stimulated by the frequent occurrence of frostbite in the armed forces [2] and the unsatisfactory results of the accepted forms of treatment. Lange,[3] Friedman,[4] and Shumacker [5] then demonstrated experimentally that anticoagulants in acute frostbite prevented development of thrombosis and gangrene. In civilian practice the occurrence of frostbite is, as a rule, uncommon, so that series of clinical results with the use of anticoagulants have not been reported. However at the Cook County Hospital in Chicago, 30 patients with frostbite were admitted and treated during the winters of 1949 and 1950; 14 of them had acute frostbite and were treated with effective anticoagulant therapy, in addition to the treatment previously used. The purpose of this report is to present the results of such treatment.

SELECTION OF CASES

Of the 30 patients with severe frostbite who required admission to the hospital during the winters of 1949 and 1950, only 14 who were exposed to the cold within 16 hours before treatment was initiated were treated with anticoagulants. The average duration of exposure was 10 hours. When the exposure occurred days or weeks prior to admission and gangrene or necrosis of tissue was already present, it was obvious that anticoagulants would be of no value. At the time of exposure, the temperature ranged from 5 to 20 F. However, the severity of the frostbite is dependent not only on the temperature, duration, and type of exposure to cold, but also on the wind velocity, the humidity, and the general condition, age, and individual susceptibility of the patient to cold. The duration of exposure was difficult to ascertain when patients had been found lying on the sidewalk, frequently in an alcoholic stupor and unable to recall the immediate past events. One patient had been shoveling coal without gloves for seven hours. All the patients were men, and the average age was 54, their ages varying from 35 to 80.

As usual, the extremities are affected to the greatest extent; in order of frequency, the hands, feet, face, and in two cases all four extremities were severely involved. These latter two patients, on admission, were in profound shock with unobtainable blood pressure and pulse. Paralysis or paresis of the toes were noted in three cases, of the fingers in two cases, and three other patients complained of paresthesias and hypesthesia.

METHODS OF TREATMENT

Anticoagulant therapy was started within one to two hours after admission. Fifty milligrams of heparin sodium was given intravenously as soon as possible and was given every four hours for 36 to 48 hours. The clotting time was determined by the two tube modification of the Lee-White method. In addition, all patients were given 200 to 300 mg. of bishydroxycoumarin (dicumarol®) as soon as they were able to swallow. Daily prothrombin levels determined the subsequent doses of bishydroxycoumarin. Attempts were made to maintain an effective prothrombin level of 10 to 20% of normal; the usual duration of treatment was 10 days. Later it was felt that heparin sodium should be given every three hours to maintain a prolonged clotting time above twice the normal level.

The routine treatment employed previously was continued in this series of cases so that the beneficial effects of the anticoagulant therapy might be permitted. This included bilateral lumbar paravertebral blocks on four patients early in the series, but later these were discontinued because of the hazard of deep needle punctures in the presence of anticoagulant therapy. One patient received tetraethylammonium chloride. Blood and plasma transfusions were necessary in four patients to combat shock. Local treatment of the affected extremities consisted of gentle cleansing with soap and water, alcohol, and the application of sterile dry or petrolatum gauze pressure dressings. Thawing was done at room temperature (no additional heat and no cooling). Penicillin was given to all patients to combat infection. The principles for treatment of acute frostbite are as follows:

1. TO PREVENT SHOCK

   Watch blood pressure, blood counts, proteins, and hematocrit.

   Give blood or plasma transfusion, as indicated or available.

   Pressure bandages (ace® or tetra®) are applied to extremity to well above expected level of frostbite. Extravasation of plasma due to edema and blistering may be minimized. The pressure dressings need not be removed for 10 to 12 days unless for sepsis or for other special reasons.

   Oxygen therapy may be required for severe generalized frostbite.

From the Hektoen Institute for Medical Research, the Department of Surgery, Cook County Hospital, and the Presbyterian Hospital.

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5. Shumacker, H. B., Jr.; White, B. H.; Cordell, A. R.; Wrenn, E. L., and Sanford, T. F.: Studies in Experimental Frostbite: I. The Effect of Heparin in Preventing Gangrene, Surgery **22**: 900, 1947.

2. TO PREVENT INFECTION

Strict surgical asepsis to frostbitten area is carried out. Cleanse part, and apply sterile dry or petrolatum gauze dressings. No massage or snow is to be applied.

Antibiotics are administered daily for at least a few days or until oral temperature is normal. Antitetanic serum is given as indicated.

3. TO PREVENT INTRAVASCULAR CLOTTING AND GANGRENE

Thaw frostbitten extremity at room temperature only. No external heat or cold is to be applied.

Anticoagulant therapy must be started within 16 hours after thawing begins.

Heparin sodium, 50 mg. intravenously, is to be given as soon as possible and repeated every three hours until effective prothrombin deficiency is obtained with bishydroxycoumarin therapy.

Bishydroxycoumarin is started as soon as patient can swallow and blood prothrombin level has been obtained.

Initial dose is 300 mg. and subsequent daily doses are decided on after prothrombin level is determined.

Effective prothrombin level is between 10% and 20% of normal. Continue for eight days. No walking or trauma to feet or hands.

RESULTS

When compared to previous years, the results of our present routine treatment of acute frostbite with anticoagulant therapy were far more satisfactory. Only one patient required amputation of a finger, although considerable loss of tissue was usually expected. One patient had persistent dependent edema and paresthesia. One death due to massive retroperitoneal hemorrhage occurred after successive lumbar blocks, probably caused by the concomitant use of anticoagulant therapy. This case has been reported elsewhere.[6] The average period of hospitalization was 42 days and the longest 270 days (case 1); many patients who were not treated with anticoagulants required hospitalization for eight months to a year or more. The following two cases are described to illustrate the results of treatment in acute frostbite with anticoagulant (case 1) and without anticoagulants (case 2).

REPORT OF CASES

CASE 1.—Mr. P. B., 50, a Negro man, was brought to Cook County Hospital on Jan. 29, 1949, in an unconscious condition after prolonged exposure to cold. He had been under the influence of alcohol and had slept for about eight hours in a gangway when the temperature was about 10 F. All four extremities were "ice cold," stiff, and solid to touch. The dorsalis pedis and radial artery pulsations were not palpable, and the patient was considered to be in an extreme condition. Blood pressure was unobtainable on admission, and the heart beat was weak. Rectal temperature was too low to be recorded on a clinical thermometer.

Within one hour after admission and exposure to room temperature, both radial artery pulsations were weakly palpable, and the blood pressure was 108/70. Whole blood, 500 cc., was administered intravenously and was followed with 1,000 cc. of 5% dextrose solution. Heparin sodium, 50 mg., was given intravenously, and this was repeated every four hours for three days. The initial prothrombin level was 95% of normal, and eight hours after the patient's admission, bishydroxycoumarin treatment was started with a 300 mg. dose the first day and 200 mg. doses the second and third days. Within 72 hours the prothrombin level reached 31% and was further reduced to 12.5%. Bishydroxycoumarin was continued for 11 days. Penicillin was given in 300,000 unit doses every four hours for 14 days, at which time it was replaced by sulfadiazine, given orally.

The upper and lower extremities were treated locally with soap, water, and alcohol and the application of sterile petrolatum gauze pressure dressings. The initial dressings on the legs had not been applied high enough so that extensive bullae developed above the level of the dressings. Reapplication of the pressure dressings to extend above the knees prevented further development of bullae (fig. 1).

Except for a low grade fever that occasionally spiked to 103 F., the patient made a surprising recovery. He regained consciousness in eight hours. Pronounced fibrous tissue formation in the fingers and toes gradually improved with physiotherapy treatments, and only the right fifth finger required amputation, though all fingernails and toenails came off. He was discharged from the hospital on Sept. 20, 1949. The long period of hospitalization was due largely to the physiotherapy treatment that was required for the fibrous tissue formation in the extremities. Some residual fibrosis and swelling of the hands and feet were present when the patient was last seen one year after the frostbite.

It is impossible to predict the extent of gangrene and necrosis that would have developed if anticoagulant therapy had not been used. However, from our previous experience and from our observations on patients who were admitted too late for anticoagulant therapy to be used, it could be assumed that both hands and both feet would have become gangrenous and required amputation. The extreme fibrosis that occurred in the hands and feet and the fingers and toes is attributed to the failure of heparin sodium given every four hours to maintain continuous anticoagulation. Accordingly, heparin sodium is now given at three-hour intervals.

Fig. 1 (case 1).—Severe frostbite of all four extremities treated with anticoagulants within one hour after patient's admission to the hospital. Appearance at three weeks shows fibrous thickening of the digits and contracture deformities. Improvement followed physical therapy treatments. Gangrene of the right fifth finger required amputation later.

CASE 2.—Mr. W. H., 49, a white man, was admitted to the hospital four days after exposure to temperature of 0 F. for two hours. Although wearing gloves, his hands became cold, white, numb, and "frozen." He had been drinking, and friends at a gasoline station rubbed snow on the hands for "some time" and then took him to a local hospital. His hands became blue, swollen, and oozing to the level of the wrists. Blisters had been present. The feet were only slightly reddened and painful. Diagnosis on admission was "superficial gangrene." In the course of three weeks both hands to the level of the wrists became black and gangrenous (fig. 2). Bilateral amputations were required later.

6. O'Connor, W. R.; Preston, F. W., and Theis, F. V.: Retroperitoneal Hemorrhage Following Lumbar Sympathetic Block During Treatment with Dicumarol, Ann. Surg. **131**: 575, 1950.

It is not possible to predict the course that this patient would have had if our present regime for the treatment of frostbite could have been used. However in the fourteen cases treated with anticoagulants, such a tragic result did not occur despite apparently equally severe frostbite. In patients treated with anticoagulants no deep gangrene developed.

COMMENT

The confusion that has existed in the principles of treatment of acute frostbite seems to be clarified somewhat by recent investigations on the pathologic physiology of the injury. Ungley and Blackwood [7] and Ungley and others [8] consider the primary tissue damage a peripheral vasoneuropathy which produces a reduced blood supply, edema, and extravasation of blood. Therefore, they direct therapy to reduce the swelling by pressure bandages and to counteract the deficient oxygen supply; local tissue metabolism is diminished by prolongation of the period of thawing when the injured part is cooled. Another group, Greene,[9] Siegmund,[10] Friedman,[4] and Shumacker,[5] regards as principal damage the formation of thrombi in the arterioles and capillaries.

Fig. 2 (case 2).—Severe frostbite of hands before anticoagulant therapy was being used. Appearance at three weeks shows demarcation of dry gangrene of both hands which later required amputation.

These authors advise prompt restoration of circulation and prevention of thrombi by anticoagulant therapy.

Lange and his associates [3] have contributed greatly to our present knowledge of the physiology and pathology of acute frostbite in experimental animals by the use of fluorescein test, the capillary microscope, and histologic studies. They showed alteration of the blood circulation in the tissues during exposure to cold. Under the capillary microscope just before freezing occurs, the red cells are seen to collect in irregular clumps or masses with plasma in between until finally the circulation comes to a complete halt. At this stage, the fluorescein test shows a complete absence of dye from the affected tissues. This persists for about one hour after exposure and indicates a vasoconstriction and circulatory stasis. Clinically the limb has a white cadaverous appearance, which follows the initial blanching and pink color on exposure.

As thawing occurs, the blood flows again and the red cells gradually resume their discreteness. At this stage there is vascular engorgement, increased blood flow through the limb, and an increased capillary permeability. The fluorescein test shows hyperfluorescence in these tissues. As plasma rapidly diffuses into the interstitial spaces, the red cells silt up in the capillaries, forming a sludge that contains some platelets but little or no fibrin. These are not true fibrin thrombi but are called "agglutinative thrombi." Clinically the part becomes intensely red, rapidly swollen, and warm. Blebs and bullae develop, which contain a straw-colored or blood-tinged fluid with a protein content similar to that of plasma. Loss of sensation, especially to pin prick, heat, and cold, appears.

In the final stage, within 24 to 48 hours, a dense fibrin clot forms in the blisters. This same process probably takes place in the interstitial spaces after the exudation of plasma; as a result, new formation of fibrous tissue and scarring and damage to the muscles and nerves occur. Three to eight days after the exposure the agglutinative thrombi undergo hyalinization, resulting in occlusive masses. The fluorescein test will show patches of nonfluorescence, and, clinically, dry-black areas of gangrene are evidence of the vascular obstruction. These observations indicate that the fundamental lesions in acute frostbite are intravascular.

Since gangrene subsequent to frostbite appears to be due to the occlusive red cell thrombi, the early use of effective anticoagulant therapy is suggested to interrupt the chain of events. Heparin sodium is known to interfere with the adhesiveness of agglutinative thrombi, and this may prevent thrombosis and gangrene in acute frostbite. Anticoagulants also preserve the resorbability of the interstitial fluid, thereby preventing secondary fibrous tissue formation. This is evidenced by the absence of clot formation in blisters when adequate anticoagulant therapy is maintained.

Anticoagulant therapy to be beneficial in frostbite must be given promptly after exposure and in adequate and effective amounts. Shumacker,[5] on the basis of animal experiments, believes that anticoagulant therapy is of greater value in the milder forms of frostbite; the more prolonged the coagulation time, the greater will be the effectiveness of this treatment in prevention of gangrene. He also feels that the drugs are of value only when treatment is started within 16 hours after exposure. It is impossible to give absolute criteria for the effectiveness of anticoagulants in prevention or limitation of the extent of gangrene in frostbite. From experimental results, Shumacker, however, believes that anticoagulant therapy is a valuable adjuvant in prevention of frostbite necrosis.

SUMMARY

Fourteen of the 30 patients with acute frostbite admitted to Cook County Hospital of Chicago during the winters of 1949 and 1950 were treated with anticoagulants. The results were most gratifying, as only one of the treated patients required local amputation of a finger. The duration of hospitalization has been appreciably reduced, and the patients returned to normal activities more quickly.

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8. Ungley, C. C.; Channell, G. O., and Richards, R. L.: Immersion Foot Syndrome, Brit. J. Surg. **33**: 17, 1945.

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Anticoagulant therapy was instituted shortly after admission. Heparin sodium was given every three or four hours for maintenance of an elevated clotting time and until adequate effect with bishydroxycoumarin (dicumarol®) was produced. Other treatment is important and consists of combat of shock with blood and plasma infusions, thawing of the involved areas by exposure to room temperature only, cleansing and application of sterile dry or petrolatum gauze pressure dressings, and employment of antibiotics to combat infection. A report of the pathologic physiology and the experimental background of our present knowledge of acute frostbite has been presented. Case histories are abstracted to illustrate the treatment as now used and the results of treatment of acute frostbite with and without anticoagulant therapy. Adequate anticoagulant therapy in the acute stage of frostbite is of great value in reduction of the incidence and extent of gangrene and the period of disability.

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CLINICAL RESPONSE OF RHEUMATOID ARTHRITIS TO POSTPARTUM PLASMA

A TWO YEAR STUDY

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The purpose of this paper is to summarize the clinical observations of eight patients with rheumatoid arthritis treated with postpartum plasma over a period of two years. These patients have now been followed long enough to permit an appraisal of this form of therapy.

A preliminary report of some of the earlier effects of postpartum plasma on these patients was made in a previous presentation.[1]

METHOD OF STUDY

This report covers the period from February, 1948, to May, 1950, and is based on observations of eight patients with rheumatoid arthritis. Only patients showing a chronic but active course of the disease were selected for treatment. All the patients had a disabling polyarticular rheumatoid arthritis graded as severe or very severe and were bedridden or confined to a chair. Patients were observed for a control period of at least two weeks prior to institution of therapy. In addition to the usual clinical observations, the total red and white blood cell count, differential count, erythrocyte sedimentation rate (Westergren), blood cholesterol and serum proteins were determined at frequent intervals. X-rays, blood pressure, and body weight were recorded routinely. Motion pictures were taken of most patients before, during, and after the use of postpartum plasma.

Table 1 contains certain data concerning the eight patients. Ages varied from 48 to 63 years. The duration of the arthritis was from 6 mo. to 18 years. Most of the patients walked with difficulty and required help. Subcutaneous nodules below the olecranon process were present in four cases. The classification of stages of rheumatoid arthritis and the criteria for therapeutic response of rheumatoid activity adopted by the New York Rheumatism Association were used in evaluating the results that are described in table 1.

Pooled postpartum plasma was administered intravenously in doses of 250 cc. once a week. In general, no toxic reactions were encountered other than an occasional attack of urticaria that responded promptly to antihistamine therapy. To provide controls, plain plasma transfusions in doses of 250 cc. each were administered weekly to a similar group of patients. No clinical or biochemical benefit occurred. When postpartum plasma was replaced by plain plasma symptoms were usually worse within a few days.

CLINICAL RESPONSE

Doses of less than 200 cc. of postpartum plasma were ineffective in producing a clinical response. It was soon noted that an improvement usually occurred between the fourth and sixth treatment. The average patient required 6 to 8 pt. (2.8-3.8 L.) of postpartum plasma before a remission took place.

The improvement was gradual, with relief of stiffness and decrease in pain, joint swelling, and inflammation. One patient with psoriatric arthritis has been symptom-free 18 mo. Four patients have maintained their improvement after treatment was discontinued 12 mo. There were no toxic effects and no cases of homologous serum hepatitis. Some patients required a larger amount of plasma given over a longer period of time before a beneficial effect was noted. The beneficial effect of postpartum plasma in a patient with severe asthma was observed during the course of treatment, suggesting an effect on the immune mechanisms underlying both conditions.

Four patients had typical subcutaneous nodules below the olecranon process. With treatment, these disappeared completely.

A dramatic effect on flexion contractures of recent origin was seen in two patients.

Analysis of the chemical determinations is demonstrated in table 2.

Two patients failed to respond. In retrospect, it appears that in both the course of therapy was too short (six treatments) and warrants no conclusion, since the therapeutic trial was obviously of insufficient length.

COMMENT

In the present study the number of patients treated with postpartum plasma was small. The results, however,

Read before the Meeting of the New York Rheumatism Association, May 10, 1950.

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1. Granirer, L. W.: Read before Seventh International Congress on Rheumatic Diseases, New York, June 1949, to be published.

over a two-year period showed a definite amelioration of the clinical manifestations. Although there was not always a complete disappearance of symptoms, relief was greater than with any preceding therapy. The patients experienced an improved sense of well-being, an increase in appetite, strength, and gained considerable weight.

Fig. 1.—Hands of patient before treatment with postpartum plasma. Note swelling of the wrists and finger joints.

Associated with the clinical improvement, there was a return to normal of the serum albumin, globulin, and hemoglobin. Sedimentation rates remained elevated in most of the patients and were not found to be a dependable sign as to the clinical progress. The plasma cholesterol usually rose above the pretreatment levels as the patients improved.

On cessation of therapy a return of symptoms required from six weeks to 12 mo. The longest remission was 18 mo. In general, the return of symptoms was slow, and they never reached the former degree of severity. Resumption of postpartum plasma therapy was always effective when there was a recurrence of symptoms. Subcutaneous nodules completely disappeared, indicating

Fig. 2.—Hands of same patient, again before treatment; unable to close hands.

that the antirheumatic substance or substances in postpartum plasma have a definite effect on the mesenchyme. In my experience postpartum plasma therapy distinctly changes the course of the disease. It shortens the activity of the illness and dramatically reduces the disability.

As a rule, no side effects were noted. There was no rise in blood pressure, blood sugar, or other undesirable chemical disturbance. One patient in whom urticaria developed after treatment responded well to antihistamines. Another complained of sensitive breasts. Ascheim-Zondek tests were negative in all cases. There were no complaints of acne, hirsutism, amenorrhea, moon face, pigmentation, or striae. Postpartum plasma almost uniformly possesses a greenish tint (pea soup) that is

Fig. 3.—Hands of patient after treatment with postpartum plasma; disappearance of effusion and joint swelling.

Fig. 4.—Hands of patient after treatment; patient can now completely close her hands.

homogenously distributed; the albumin and globulin are low.[2] Postpartum plasma cholesterol is also low, and the phospholipids never exceed the upper limits of normal.[3]

The result of this preliminary study over a two-year period indicates that postpartum plasma is an effective mode of treatment for rheumatoid arthritis. Administration of the plasma over a long period can be well tolerated. Once a remission occurs treatment need not be taken continuously. Relapses are usually mild and gradual and respond well to further therapy. Postpartum plasma is an available antiarthritic agent, and its production is neither difficult nor costly. Although complete relief was not achieved in all cases, the results obtained

2. Granirer, L. W.: A Study of the Albumin-Globulin Content In Postpartum Plasma, Science **3**: 204, 1950.

3. Granirer, L. W.: A Study of the Lipids In Postpartum Plasma: Its Use in Rheumatoid Arthritis, Surg., Gynec. & Obst. **91**: 591-592 (Nov.) 1950.

with postpartum plasma, on the whole, were as dramatic as any recorded for cortisone or pituitary adrenocorticotropic hormone (ACTH).

ADDENDUM

Since July, 1950, seven patients resistant to previous cortisone and pituitary adrenocorticotropic hormone (ACTH) therapy have shown an excellent response to postpartum plasma. In this series there were five patients with severe rheumatoid arthritis, one patient with exfoliative dermatitis and arthritis, and one with Still's disease.

CONCLUSIONS

In the present study the number of patients treated was small, and it is realized that the results obtained in this initial study will have to be confirmed.

1. Pooled postpartum plasma produced a gradual and sustained remission in rheumatoid arthritis.
2. Remissions were observed to last from six weeks to one and one-half years.
3. The chemical abnormalities present in the disease were restored to normal.
4. Patients gained from to five to 30 lb. (2,200-13,600 gm.).
5. An improved sense of well-being, a better appetite, increased vigor, strength, and amelioration of joint pain and swelling were routinely observed.
6. There was no relationship between the sedimentation rate and the clinical improvement.
7. In more than 500 postpartum plasma treatments there were no instances of homologous serum hepatitis.
8. Unlike either pituitary adrenocorticotropic hormone (ACTH) or cortisone, postpartum plasma had no side effects; treatments were administered only once a week.

TABLE 1.—*Before and After Treatment with Pooled Postpartum Plasma*

Case	Age	Rheumatoid Arthritis Duration and Degree	Extent of Involvement	Complications	Weekly Dose	First Improvement Noted	Total No. of Treatments	Duration of Remission	Grade of Response	Comments
1	48	3 yr.; stage 3 (severe)	Shoulders, hands, wrists, elbows, knees, ankles, feet; bedridden	Alopecia	250 cc.	4 treatments	14	4 mo.	Grade 2 (marked)	Subcutaneous nodule below elbow disappeared after 9 treatments; hair on scalp returned; gained 19 lb.
2	42	9 yr.; stage 3 (severe)	Fingers, wrists, elbows, shoulders, hips, knees, ankles; bedridden; 1943, severe nephritis after gold salts	Cholecystectomy	250 cc.	5 treatments	16	14 mo.	Grade 2	Large subcutaneous nodule below both elbows disappeared after 6 treatments; gained 20 lb.
3	49	4 yr.; stage 3 (severe)	Shoulders, neck, elbows, wrists, fingers, knees, ankles; 1945, poor response to gold salts	.....	250 cc.	4 treatments	12	12 mo.	Grade 2	Flexion deformity of knees corrected; gained 21 lb.
4	48	2 yr.; stage 3 (severe)	Neck, shoulders, wrists, hands, knees, ankles, feet	Asthma, bronchiectasis, 9 yr.	250 cc.	4 treatments	14	6 wk.	Grade 2	Asthmatic attacks infrequent; gained 26 lb.; subcutaneous nodules below both elbows gone after 10 treatments
5	63	18 yr.; stage 3 (severe)	Knees, shoulders, neck, elbows, wrists, hands	.....	200 cc.	5 treatments	6	8 wk.	Grade 2	Better than she has been in yrs.; gained 5 lb.
6	52	6 mo.; stage 3 (severe)	Shoulders, elbows, knees, ankles, toes	Psoriasis, 8 yr.	250 cc.	3 treatments	10	18 mo.	Grade 2	Gained 28 lb.; no arthritis, no psoriasis
7	45	10 yr.; stage 3 (severe)	Shoulders, elbows, wrists, ankles, feet; 1945, exfoliative dermatitis 1 yr. after gold salts	.....	250 cc.	4 treatments	14	6 mo.	Grade 2	Gained 10 lb.; nodule below elbow disappeared
8	45	3 yr.; stage 3 (severe)	Hands, wrists, elbows, ankles, feet	.....	250 cc.	10 treatments	15	16 mo.	Grade 2	Gained 30 lb.

TABLE 2.—*Analysis of Chemical Changes in Patients Treated with Pooled Postpartum Plasma*

	Hemoglobin, Gm.		Red Blood Count, Millions		Albumin, Gm. per 100 Cc.		Globulin, Gm. per 100 Cc.		Total Cholesterol, Mg. per 100 Cc.		Erythrocyte Sedimentation Rate (Westergren), Mm. per Hr.		Weight, Lb.	
Case	Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment	Before Treatment	After Treatment
1	11.0	14.0	4.0	5.3	4.6	4.9	4.0	3.8	140	210	28	22	102	131
2	12.2	16.2	4.9	5.5	4.8	4.2	3.2	2.7	170	225	46	40	105	110
3	10.0	13.0	3.8	5.1	4.0	5.4	4.0	3.2	155	180	47	45	172	200
4	10.5	12.5	4.4	4.5	4.3	5.0	4.2	3.0	140	178	38	30	94	100
5	11.0	15.5	4.1	4.9	3.8	4.3	3.3	3.0	160	185	45	40	85	115
6	11.5	14.0	4.0	5.5	3.5	4.4	3.8	2.2	140	295	40	28	102	133
7	10.2	14.0	3.9	4.6	4.2	4.9	4.0	2.4	160	175	85	40	160	180
8	11.3	13.5	3.8	4.5	4.0	5.2	3.3	2.5	145	185	38	23	121	140

Nephrons and Glomeruli.—Each kidney has about 1,200,000 nephrons, each about 2 inches long, so that the combined length of all nephrons in an adult would amount to 75 miles. The length of individual capillaries in a glomerulus is about one inch: thus, the total of all capillaries in both kidneys would measure more than 37 miles. The entire filtering surface of all glomeruli exceeds twice the body surface.—F. R. Stearns, M.D., Man in Numbers, *Clinical Medicine*, February, 1951.

PROGNOSIS OF ANGINA PECTORIS AND CORONARY OCCLUSION

FOLLOW-UP OF 1,700 CASES

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There are comparatively few reports in the literature of large series of cases bearing on the prognosis of angina pectoris and coronary occlusion, and the available reports show considerable differences in their findings. Some of the reports refer only to cases that were followed till death and do not include those of patients still living, thus conveying a wrong impression of the actual prognosis.

As examples of the differences in the longevity figures of angina pectoris as reported in the literature are the following: Herrick and Nuzum [1] in a study of 200 patients, 50 of whom died, found the average longevity for the dead group to be three years. Mackenzie [2] reported on 380 patients, 214 of whom died, with an average longevity for the dead group of 5.4 years. White [3] reported on 200 patients, 66 of whom died with an average longevity of 3.4 years for the dead group. The average longevity of the remaining 134 living patients was 4.6 years. White and Bland [4] reported on 500 patients with angina pectoris who were under observation 23 years, between 1920 and 1943. At the end of that period, 445 were dead, the average longevity being 7.9 years. Of the 52 patients known to be still living, the average longevity was 18.4 years. Eppinger and Levine [5] reported 141 fatal cases, with an average longevity of 4.5 years. In 166 fatal cases of Wedd and Smith [6] the average longevity was 5.8 years. Parker and co-workers [7] reviewed the records of 3,440 cases of the Mayo Clinic. The average survival for their entire group was five years.

Because of the comparatively short time elapsed since coronary thrombosis became a recognizable clinical entity, very few reports have appeared in the literature to date on the ultimate prognosis of this phase of coronary disease. Conner and Holt [8] reported 287 cases, with an immediate mortality of 16.2%.

White [9] reported the case of one man who lived 17½ years and that of another man [10] who lived 25 years after an attack of myocardial infarction. Bedford [11] in a study of 31 cases found the average duration of life to be six months. He remarked that some persons may live more than 5 years. Drake [12] reported on a patient who lived 37 years after an attack of coronary thrombosis. Levine and Rosenbaum,[13] in a study of 372 cases, found the average longevity in 101 fatal cases to be 3.4 years. Master and co-workers [14] found a death rate of 8% up to the time of discharge from acute care in 243 patients with coronary occlusion.

Katz and co-workers [15] reported on 488 patients of myocardial infarction, some of whom were followed for variable periods up to six years. They estimated that about 25% died within the first two months, 50% by the end of the first year and 75% by the end of the third year.

Because of this comparative scarcity of reports on the prognosis of angina pectoris and coronary thrombosis and of the variations in the findings, I considered it of value to review a series of 1,700 cases that came under my observation during a period of 25 years. This report deals with such review.

SELECTION OF CASES

The cases consisted of those of private patients and those seen in consultation. Each case was followed over the entire period of observation either by me or by the physician in charge of the case. Those patients who did not come for a periodic check-up were followed by mail. If no reply was obtained by the time this statistical study was made, the case was not included in this review.

It is realized that the addition of new cases from year to year introduces some error in longevity. Much of this error, however, was partly overcome by a careful history of the exact date of onset of the clinical manifestations of the disease in each case.

COMPOSITION OF CASES

The 1,700 patients whose cases form the basis of this report consisted of 1,302 males and 398 females. The incidence of males to females was thus about 3.2:1. This male-to-female ratio is practically the same as in the report of White and Bland,[4b] but smaller than in that of Parker and co-workers,[7] in which the radio was 4.3:1.

At the time of submission of this report, 1,021 patients were living and 679 were dead. The 1,021 living patients consisted of 814 males and 207 females. The 679 dead consisted of 488 males and 191 females. The total percentage of dead was thus 39.9 for the entire group, 37.5 for the males and 47.9 for the females.

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OBSERVATIONS

Mode of Onset of Clinical Manifestations.—The onset of the clinical manifestations in this series is shown in table 1. In 809 cases the anginal syndrome developed and progressed slowly over a period of months or years, while in 891 cases the onset was abrupt in the form of a coronary occlusion with apparently no warning symptoms.

Age at Onset of Clinical Manifestations.—The average age at onset of the clinical manifestations for the entire series of 1,700 cases was 55.8 years. This is a little younger than in the series reported by White and co-workers,[4b] in which the average age at onset was 56.5 years, and still younger than in that of Parker and co-workers,[7] in which the average age was 57.1 years. The youngest ages at onset in our series were 22½ and 20 years, and the oldest were 84 and 93 years respectively, for males and females.

On breaking up the figures of the entire series of 1,700 cases into its male and female, living and dead components and in decades, the following features are observed, as shown in tables 2 and 3.

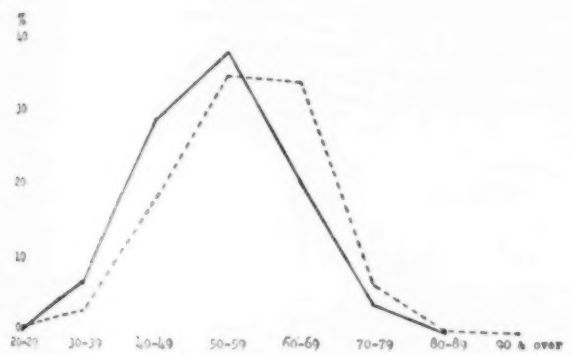

Chart 1.—Age at onset of clinical manifestations of coronary disease in the entire series of 1,700 cases. Solid line, males; broken line, females.

The disease developed in women on the average at an older age than in men and in the dead group at an older age than in the living group. Thus, the average age at onset among women was 56.7 years in the living group and 57.8 in the dead group, while in men it was 51.6 and 54.7 respectively, as shown in table 2. It was also observed that decade by decade the percentage number of cases in which the disease developed after 50 years in men and after 60 years in women is definitely greater in the dead group, as shown in table 3.

In both men and women and in the living and dead groups, the disease developed in the greatest number of patients between 50 and 59 years of age, comprising more than one-third of the cases of the entire series. Second in frequency were the ages 60 to 69 and third in frequency 40 to 49 years. These three age groups together comprised 87.9% of cases in men and 87.2% of cases in women. The rest were distributed in the ages younger than 40 years and older than 69 years. Of this remaining group the males comprised mainly the younger and females the older ages, as shown in table 3 and chart 1.

Age at Death.—The age at death in the group of 679 patients who died varied considerably, as shown in table 5 and chart 2. The average age for males was 58.8 years and for females 61.7 years. The youngest were 23 and 25 years and the oldest 85 and 94 respectively for males and females. A greater percentage of woman than of men lived beyond 60 years of age. The actual figures were 59.2% for females and 50.9% for males. Beyond 70 years of age 17.9% of females and 15% of males were still alive. Beyond 80 years only 3.7% females and 2.3% males were still living.

TABLE 1.—*Mode of Onset of Clinical Manifestations*

		Slow Onset		Acute Onset	
	Total No.	No.	%	No.	%
Males	1,302	587	45.1	715	54.9
Females	398	222	55.5	176	44.5

Chart 2 illustrates the age at onset and death among males and females per decade in the group that succumbed to the disease.

Length of Survival.—The survival period from the onset of the earliest clinical manifestations of the disease to death varied considerably in different individuals. In the series of 679 patients who died, the average length of survival was 4.7 years for males and 4.5 years for females. The shortest survival was three hours in a man who never presented symptoms of coronary disease and in whom acute coronary occlusion suddenly developed. The longest survival was 35 years in a man in whom signs of the anginal syndrome first developed at 35 years of age and who finally succumbed to an acute attack of coronary occlusion at 70 years.

These survival figures do not depict the true longevity in this disease. To get a true picture we must take into consideration also the length of survival of all living patients. Thus, of the 1,021 patients still alive at the time of this statistical study, the average length of survival was 5.5 years, and for males and females separately 5.3 and 5.6 years respectively. One patient was still living 32 years after the onset of symptoms.

A better idea of survival in this disease is obtained if we divide the entire series of patients into groups of given years, as is shown in table 4.

It will be observed here that in the dead group, 32.8% of the males and 34.5% of the females were still alive at the end of five years. At the end of 10 years 10% of the males and 9.4% of the females were still living. At the end of 15 years the percentages of survivors were 3.5 and 1.6% respectively for males and females. After the 15th year, the survival rate rapidly drops. This is shown graphically in chart 3.

TABLE 2.—*Youngest, Oldest and Mean Age at Onset of Clinical Manifestations in Years*

	Male		Female	
Age	Living Group	Dead Group	Living Group	Dead Group
Youngest	22½	23½	30	20
Oldest	78	84	87	93
Mean	51.6	54.7	56.7	57.8

In the group of 1,021 living patients the number living up to three years was disregarded, as that period was considered too short to be of value statistically. Those living longer assumed more significance as an index of longevity.

In table 4, under the group of 1,021 living patients, are summarized the number of patients still alive in each given year. It is possible, therefore, to include in any given year all other patients that remained alive longer.

Table 6 shows a few representative years with the number and percentage of patients still alive. It will be observed that as many as 67.1% of the males and 61.4% of the females were alive four years; 54.6% and 46.1% respectively, five years; 15.1% and 15.4% respectively, 10 years and 4.2% and 6.2% respectively 15 years and longer. When compared with the longevity in the dead group the percentage of patients in the living group was far greater year by year. The final longevity will be still greater if these patients are followed over a number of years to come.

It is of interest to find that a relatively smaller number of females than males were alive up to 10 years and a relatively larger number beyond that.

Causes of Death.—Of the 679 patients who died the causes of death were definitely ascertained for 393 cases and summarized in table 7. It will be noted that 83.5% of the patients died of underlying heart disease, the vast majority, namely 67.6% from coronary occlusion. Of the remaining 16.5%, approximately one-third died of cerebral vascular accidents, another third of cancer in various regions of the body, and the rest from a variety of other causes. The longevity in this group with coronary disease would, therefore, have been considerably increased in at least 16% of patients if no intercurrent disease terminated their lives.

Duration Between the Onset of Symptoms of Coronary Disease and First Attack of Coronary Occlusion.—Of the entire series of 1,700 patients, 1,208 had one or more attacks of coronary occlusion during the period of observation, and 492 have not had any attack so far. Of the 1,208 who sustained one or more acute attacks of occlusion, 878 exhibited such an attack as the first manifestation of coronary disease. The other 330 patients have had preexisting symptoms for variable periods before such attack.

In the 330 patients who had shown symptoms previous to the onset of coronary occlusion, the duration between the onset of symptoms and the first attack of occlusion varied considerably, as shown in table 8. The average duration was 3.9 years for male subjects and 3.4 years for female subjects. The longest duration was 21 years and the shortest two hours. On the basis of these findings it appears that occlusion occurs most frequently between three months and two years after the onset of the anginal syndrome.

TABLE 3.—*Age at Onset of Clinical Manifestations in Decades*

	Living Group				Dead Group				Total			
	Males		Females		Males		Females		Males		Females	
Age, Yr.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
20-29	4	0.5	0	....	3	0.6	4	2.1	7	0.6	4	1.0
30-39	65	8.0	9	4.4	29	6.0	4	2.1	94	7.2	13	3.3
40-49	263	32.3	43	20.8	110	22.5	29	15.0	373	28.7	72	18.0
50-59	307	37.7	82	39.6	191	39.1	57	29.0	498	38.2	139	35.0
60-69	152	18.7	61	29.4	115	23.4	75	39.0	267	21.0	136	34.2
70-79	23	2.8	11	5.3	38	8.0	18	10.0	63	4.1	29	7.2
80-89	0	....	1	0.5	2	0.4	2	1.4	2	0.2	3	0.8
90 and over	0	....	0	...	0	....	2	1.4	0	....	2	0.5

TABLE 4.—*Length of Survival of 679 Dead and in 1,021 Living Patients with Coronary Disease*

	Dead Group						Living Group			
	Males (488)			Females (191)			Males (814)		Females (207)	
Years After Onset of Symptoms	No. Dead	Still Living No.	Still Living %	No. Dead	Still Living No.	Still Living %	No.	%	No.	%
½	28	460	94.3	12	179	93.7	40	5.0	11	5.3
1	47	413	84.6	13	166	86.9	65	8.0	14	6.7
2	58	355	72.7	24	142	74.3	75	9.2	27	13.0
3	74	281	57.6	34	108	56.5	86	10.6	28	13.5
4	58	223	45.7	23	85	44.5	102	12.5	32	15.3
5	63	160	32.8	19	66	34.5	85	10.4	20	9.7
6	42	118	24.2	14	52	27.2	90	11.1	14	6.7
7	30	88	18.0	11	41	21.5	63	7.4	14	6.6
8	16	72	14.8	8	33	17.3	49	6.1	9	4.3
9	10	62	12.7	8	25	13.1	37	4.5	7	3.4
10	13	49	10.0	7	18	9.4	30	3.8	6	3.0
11	11	38	7.8	2	16	8.4	29	3.7	4	2.0
12	6	32	6.6	8	8	4.2	15	1.9	7	3.4
13	5	27	5.5	1	7	3.7	7	0.9	1	0.5
14	6	21	4.3	0	7	3.7	11	1.4	1	0.5
15	4	17	3.5	4	3	1.6	8	1.0	3	1.5
16	3	15	3.1	1	2	1.0	5	0.6	2	1.0
17	2	12	2.4	1	1	0.5	4	0.4	2	1.0
18	2	10	2.0	1	0	...	5	0.6	1	0.5
19	1	9	1.8	..	..	...	0	...	0	...
20	5	4	0.8	..	..	...	4	0.4	0	...
21	2	2	0.4	..	..	...	2	0.2	..	...
23	..	..	...	..	..	...	1	0.1	..	...
24	..	..	...	..	..	...	..	...	1	0.5
25	1	1	0.2	..	..	...	..	...	..	...
27	..	..	...	..	..	...	..	..	1	0.5
28	..	..	...	..	..	...	1	0.1	..	...
29	..	..	...	..	..	...	..	...	1	0.5
32	..	..	...	..	..	...	..	...	1	0.5
35	1	0	0.0	..	..	...	..	...	..	...

Duration Between the First Attack of Coronary Occlusion and the Present Age of Living Patients.—Of the 1,208 patients who had at least one attack of coronary occlusion, 785 were still alive when this report was compiled; of these, 650 were males and 135 females. The average duration between the first attack and the present age was 4.9 years for males and 4.5 years for females.

Table 9 summarizes the number and percentage of cases in the respective months and years that elapsed between the first attack of coronary occlusion and the time that this report was compiled.

It will be noted that as many as 45.3% of the males and 37.8% of the females were alive five years or more after the first attack; 10.7 and 10.4 of males and females respectively were still alive 10 years or more, and 2.1% of the males were still alive 15 years or longer.

Duration Between First Attack of Coronary Occlusion and Death.—Of the 423 cases of coronary occlusion who ultimately died, the average duration of life between the first attack of coronary occlusion and death was 3.8 years for males and 3.1 years for females.

Table 10 summarizes the longevity between the first attack of coronary occlusion and death.

It will be noted that 68.4% of the males and 84.8% of the females died within 4 years after the first attack of coronary occlusion. Only 31.6% of the males and 15.2% of the females lived 5 years of longer, and 8.8% of the males and 7.2% of the females lived 10 years or longer. It is of interest also to find that 1.5% of the males and 1.6% of the females lived 15 years or longer after an acute attack of coronary occlusion.

TABLE 5.—*Age at Death*

	Males		Females	
Age in Years	No.	%	No.	%
20-29	2	0.4	2	1.1
30-39	11	2.2	3	1.6
40-49	56	11.5	19	9.9
50-59	171	35.0	55	28.2
60-69	175	35.9	78	41.3
70-79	62	12.7	27	14.2
80-89	11	2.3	5	2.6
90 and over	0	....	2	1.1
Mean age	58.8 yr.		61.7 yr.	
Youngest	23 yr.		25 yr.	
Oldest	85 yr.		94 yr.	

TABLE 6.—*Number and Percentage of Patients Alive During the Given Years in the Living Group of 1,021*

	At End of 4 Yr.		At End of 5 Yr.		At End of 10 Yr.		At End of 15 Yr.	
Sex	No.	%	No.	%	No.	%	No.	%
Males	548	67.1	446	54.6	122	15.1	30	4.2
Females	97	61.4	65	46.1	31	15.4	12	6.2

COMMENT

When we speak of the prognosis of angina pectoris and coronary occlusion, we have in mind the outlook in any given case in which the patient suffers from degenerative coronary disease. The pathology was fully discussed before. In brief, it consists of coronary arteriosclerosis, atheromatosis, and in some cases intra-arterial wall hemorrhages. These changes result in a gradual narrowing and finally complete obstruction of one or more branches of the coronary arterial tree with or without a fresh thrombosis. These degenerative processes usually progress slowly over a period of years and are not detectable until they reach a stage when clinical manifestations appear.

There are many cases in which no clinical manifestations of the disease appear until either an acute episode of coronary occlusion occurs or sudden death takes place. In many of these, autopsy findings may reveal extensive coronary disease which has surely taken years to develop and yet the patient was asymptomatic during life. Thus, in an analysis of the autopsy findings of 2,030 cases of sudden and unexplainable death, Rabson and Helpern [16] found that 45% were attributed to disease of the heart and aorta and 30.4% of these were caused by coronary artery sclerosis. In the latter, 75.5% showed no fresh thrombosis.

TABLE 7.—*Causes of Death in 393 Cases of Coronary Disease*

	Cases	
	No.	%
Cardiac death	328	83.5
Coronary occlusion	221	67.6
Sudden	54	16.5
Decompensation	50	15.3
Stokes-Adams syndrome	2	0.6
Subacute bacterial endocarditis	1	0.3
Cerebral accident	20	5.1
Cancer (various parts of the body)	22	5.6
Other causes	23	5.8
Pulmonary embolization	3	0.8
Postoperative	7	1.8
Ruptured aneurysm	3	0.8
Hodgkin's disease, leukemia	4	1.0
Nephritis	2	0.6
Accident, pneumonia	2	0.6
Cirrhosis of liver	1	0.3
Dementia	1	0.3

TABLE 8.—*Duration Between Onset of Symptoms of Coronary Disease and First Attack of Coronary Occlusion*

	Males (280)		Females (70)	
Duration	No.	%	No.	%
1 day	3	1.1	1	1.4
2-6 days	9	3.5	3	4.3
1-4 wk	16	6.1	4	5.7
1-2 mo	23	8.8	5	7.1
3-6 mo	46	17.7	8	11.4
7-12 mo	35	13.5	10	14.3
1½-2 yr	35	13.5	15	21.5
3 yr	22	8.4	1	1.4
4 yr	18	6.9	4	5.7
5 yr	12	4.6	4	5.7
6 yr	9	3.5	3	4.3
7 yr	7	2.7	1	1.4
8 yr	7	2.7	5	7.1
9 yr	2	0.8	2	2.9
10 yr. or more	16	6.2	4	5.8
Longest	21 yr.		17 yr.	
Shortest	2 hr.		24 hr.	
Average	3.9 yr.		3.4 yr.	

For these reasons the actual prognosis of coronary disease from its early development to death cannot be estimated. We can speak only of the period from the onset of clinical manifestations. When thus considered, we find by experience that in a great many cases the symptomatology of coronary disease, expressed mainly in the anginal syndrome, does not progress uninter-

16. Rabson, S. M., and Helpern, M.: Sudden and Unexpected Natural Death, Am. Heart J. 35:635, 1948.

ruptedly from its inception to the end. It exhibits itself by periods of remission or quiescence and exacerbation or crisis. In some cases the anginal syndrome may occur for a variable period and subside, leaving the patient in a comfortable state for many days, weeks, months, or even years, only to recur again. It is very likely, as Blumgart and co-workers [17] have demonstrated, that in many cases during the period when the anginal syndrome is present, closure of vessels is taking place, even though the classic criteria of coronary thrombosis are absent. In many cases of uncomplicated angina pectoris the patients have been found by these authors to have old occlusions of one or more of the coronary arteries. That the typical picture of coronary occlusion was not evident is due to the fact that occlusion was gradual and there was time for a collateral circulation to develop.

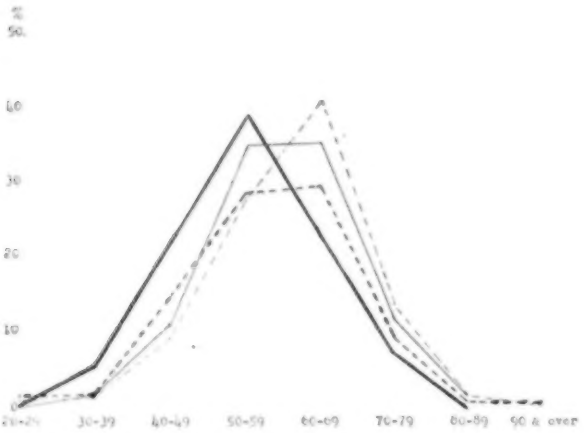

Chart 2.—Age at onset and at death in the group of 679 cases that died from coronary disease. Solid heavy line, age at onset, males; solid thin line, age at death, males; broken heavy line, age at onset, females; broken thin line, age at death, females.

Because of the periods of remission of the anginal syndrome, we must be extremely careful in taking a history to determine the exact time of onset of symptoms. In many of the cases of this study it was difficult to fix the exact date of such onset, especially if the syndrome was of long duration. Only on careful inquiry, which was made in each of the cases, and on helping the patient in his recollections by association with other events could the time be fixed. It is therefore, understandable how errors might arise in the study of any series of cases unless great care is exercised. Even then the recollection of some persons may not be entirely reliable.

The mode on onset of the clinical manifestations in our series was either in the form of an acute episode or in a slowly progressing manner. In approximately half of the cases the onset was acute, in the form of the classic manifestations of coronary occlusion. This occurred more frequently in males. It is important to note that even in this acute group, some of the patients gave a history of antecedent vague digestive disturbances and other unexplainable symptoms for a variable period before the acute episode, and these may have been due to coronary insufficiency. For instance, some complained of vague "rheumatic" aches and pains in the shoulders, arms or in the back of the neck appearing at irregular intervals, especially in cold weather, not related to exertion, for some months before an acute attack. Others complained of occasional spontaneous fleeting precordial discomfort, a tired feeling or other vague disturbances.

The observations in this study that in the group who died the disease developed a little later than in the living group would tend to indicate that the chances of survival are greater if the onset of the disease occurs earlier in life. This appears to be contrary to the belief that the earlier the onset of clinical manifestations the shorter the life. This may be true if we compare the longevity of patients with coronary disease with the longevity of the general population, but it does not appear to be true in the longevity curves of patients with coronary disease itself. These findings confirm those of other authors that in women the disease develops later in life and they die later than men. The later death is due not to a greater longevity, but to the later development of the disease.

As pointed out before, in estimating the average length of survival in angina pectoris and coronary occlusion, we must take into consideration not only those patients who died but also those remaining alive over a given period. This is shown in this series, in which the average length of survival in the living group of 1,021 patients at the time of compilation of the statistics was already greater than in the dead group of 679 patients.

The estimated average duration of life of 4.6 years for the dead group and 5.5 years for the living group in this series gives an inaccurate idea of the actual longevity. As many as 32.8% of the males and 34.5% of the females were still living at the end of five years in the group of 679 patients who ultimately died. Of the 1,021 living patients as many as 54.6% of the males and 46.1% of the females were alive five years or longer and as many as 15.1% of the males and 15.4% of the females were alive 10 years or longer. The percentage of patients alive 15 years or longer was 4.2 for males and 6.2 for females. One patient was still alive 35 years after the onset of the disease.

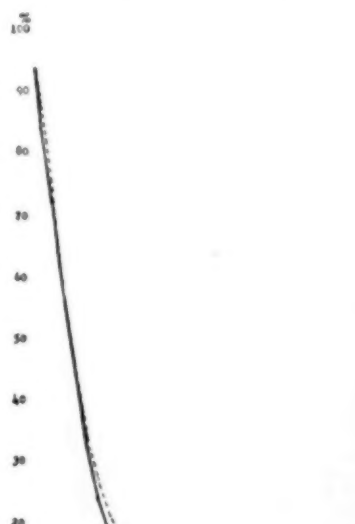

Chart 3.—Percentage of the 679 patients who eventually died still alive at the end of the given year. Solid line, males; broken line, females.

In considering the longevity in coronary disease we must also bear in mind the fact that a good proportion of such patients are killed by other disease. Of the 393 patients for whom the cause of death was ascertainable, 16.5% died from other than the coronary disease. Had life not been terminated by the other diseases, the patient would undoubtedly have lived longer thus lengthening the longevity figures.

17. Blumgart, H. L.; Schlesinger, M. J., and Davis, D.: Studies on the Relation of the Clinical Manifestations of Angina Pectoris, Coronary Thrombosis and Myocardial Infarction, Am. Heart J. 19: 1, 1940.

The observation in this study that 72.6% of the 1,208 patients with coronary thrombosis had no clinical evidence of coronary disease before the first attack of coronary occlusion is a little higher than that of Conner and Holt.[8] In their series of 287 patients, 62% had no antecedent circulatory symptoms.

TABLE 9.—*Duration Between First Attack of Coronary Occlusion and Present Age of Living Patients*

Time	Males (650)		Females (135)	
	No.	%	No.	%
1-2 mo.	3	0.5	1	0.7
3-6 mo.	47	7.2	12	8.9
7 mo.-1 yr.	60	9.2	12	8.9
2 yr.	74	11.3	20	14.8
3 yr.	77	11.8	20	14.8
4 yr.	96	14.7	19	14.1
5 yr.	57	8.8	12	8.9
6 yr.	68	10.4	8	5.9
7 yr.	46	7.1	8	5.9
8 yr.	34	5.2	7	5.2
9 yr.	20	3.1	2	1.5
10 yr.	17	2.6	4	3.0
11 yr.	13	2.0	4	3.0
12 yr.	10	1.5	5	3.7
13 yr.	3	0.5	0	...
14 yr.	13	2.0	1	0.7
15 yr.	3	0.5	..	...
16 yr. and over	9	1.6	..	...

In 330 patients in the present series who had antecedent symptoms before the first attack of coronary occlusion, the duration of symptoms before the attack varied considerably, the average being 3.9 years for males and 3.4 years for females. However, as many as 27.4 and 32.9% of the males and females respectively had the attack four years or longer after the onset of symptoms and in 6.2% of the males and 5.8% of the females the attack occurred 10 years or longer after the onset. The longest period was 21 years for males and 17 years for females.

Of particular interest in this study is the longevity after the first attack of coronary occlusion. This appears to surpass the findings of Conner and Holt,[8] Katz and co-workers,[10] and of Levine and Rosenbaum.[13] Of 117 patients who recovered from the first attack in the Conner and Holt series, 75% were in good health at the end of the first year, 56% at the end of the second year, 21% at the end of the fifth year and 3.4% at the end of 10 years. One patient lived 18 years and died after a second attack. The comparatively short period of observation and incomplete follow-up in the series reported by Katz and co-workers appears to yield approximately the same findings. Of 101 patients who survived the first attack in Levine and Rosenbaum's series, the average longevity was 41.1 months. About 25% died within one year, 50% within two years and 75% within five years and the remainder between five and 12 years. One was alive 25 years after the first attack.

In the series of 1,208 patients here reported on who have had at least one attack of coronary occlusion, the average duration of life of the 423 who eventually died was only 3.8 years for males and 3.1 years for females. This is approximately the same as in the series of Levine and Rosenbaum.[13] however, of the 785 patients in the series under study who were still alive, the average duration of life up to the time of this report was 4.9 years for males and 4.5 years for females, which greatly surpass the findings of Levine and Rosenbaum, and the patients were all still alive. Likewise, even in the group that ultimately died in the series reported here the specific longevity of the number remaining alive after a given period was considerably longer than in the series of Levine and Rosenbaum and that of Conner and Holt. Thus in the series under study here 83.1% of the males and 81.5% of the females were still alive two years or more after the first attack, and 45.3% of the males and 39.8% of the females were still alive five years or longer. The percentage number still alive 10 years or over was 10.7 for males and 11.4 for females. One of the patients was still alive 30 years after an attack of coronary occlusion. The longevity in this case surpassed that in all the reported cases except that of Drake,[12] whose patient died 38 years after the first attack. There is a possibility that my patient may ultimately reach that longevity, for he was in good health at the time this report was compiled.

SUMMARY

A statistical study was made of 1,700 patients with angina pectoris and coronary occlusion observed over a period of 25 years. Of these, 1,302 were males and 398 females. The ratio of males to females was thus about 3.2:1. Of the entire series, 1,021 were still living and 679 were dead.

The onset of clinical manifestations was slow in 809 cases and abrupt, in the form of an acute coronary occlusion, in 891.

The over-all average age at onset for the entire series was 55.8 years. The youngest age was 20 years and the oldest 93 years. The average age at onset in the living group was 56.7 years for females and 51.6 years for males; in the dead group, 57.8 and 54.7 respectively. The ages at onset in the order of frequency were between 50 and 59 years, 60 and 69 years, and 40 and 49 years. These comprised 87.9% of the males and 87.2% of the females. The balance were distributed in the ages younger than 40 years and older than 69 years, males comprising mainly the younger and females the older ages.

The average age at death for males was 58.8 years and for females 61.7 years. The youngest age was 23

TABLE 10.—*Duration Between First Attack of Coronary Occlusion and Death*

Time	Males (296)		Females (127)	
	No.	%	No.	%
Less than 1 mo.	21	7.3	11	8.8
1-2 mo.	14	4.1	11	8.8
3-6 mo.	28	9.5	16	12.6
7 mo.-1 yr.	41	14.0	18	14.2
2 yr.	34	11.5	19	14.4
3 yr.	38	12.9	15	11.8
4 yr.	27	9.1	18	14.2
5 yr.	27	9.1	3	2.4
6 yr.	19	6.4	0	...
7 yr.	7	2.4	2	1.6
8 yr.	8	2.8	3	2.4
9 yr.	6	2.1	2	1.6
10 yr.	4	1.4	4	3.2
11 yr.	7	2.4	1	0.8
12 yr.	6	2.1	1	0.8
13 yr.	4	1.4	1	0.8
14 yr.	0	...	0	...
15 yr.	1	0.3	2	1.6
16 yr.	1	0.3	..	...
17 yr.	1	0.3	..	...
18 yr.	1	0.3	..	...
30 yr.	1	0.3	..	...

years and the oldest 94 years. The percentage number of patients who lived beyond 60 years of age was 59.2% for women and 50.9% for men; beyond 70 years, 17.9% for females and 15.0% for males, and, beyond 80 years, 3.7 % for females and 2.3% for males.

The average length of survival of the 679 patients who died was 4.7 years for males and 4.5 years for females. The shortest survival was three hours and the longest 35 years. The percentage of patients still living at the end of five years was 32.8 for males and 34.5 for females; at the end of 10 years, 10 for males and 9.4 for females; and, at the end of 15 years, 3.5 for males and 1.6 for females.

The average length of survival of the 1,021 patients that were still living was 5.3 years for males and 5.6 years for females. One patient was still alive 32 years after the onset of symptoms. The percentage of patients still living at the end of 5 years was 54.6 for males and 46.1 for females; at the end of 10 years, 15.1 for males and 15.4 for females, and, at the end of 15 years, 4.2 for males and 6.2 for females.

Of 393 patients the cause of whose death was known, death was due to the underlying heart disease in 83.5% and to other causes in 16.5%.

Of 1,208 patients who had one or more attacks of coronary occlusion, 878 had the attack as a first manifestation of coronary disease. In 330 who had had symptoms previous to occlusion, the average duration from the onset of symptoms to the first attack of coronary occlusion was 3.9 years for males and 3.4 years for females. The longest duration was 21 years and the shortest two hours.

In 785 patients who were still alive after one attack or more of coronary occlusion, the average duration between the first attack and the time when records were reviewed was 4.9 years for males and 4.5 years for females. About 45.3% of the males and 37.8% of the females were alive 5 years or more; 10.7% and 10.4% respectively, 10 years or more, and 2.1%, 15 years or more.

In 423 patients with coronary occlusion who ultimately died, the average longevity after the first attack was 3.8 years for males and 3.1 years for females. About 68.4% of the males and 84.8% of the females died within 4 years after the first attack; about 31.6% of the males and 15.2% of the females lived 5 years or longer; 8.8% of the males and 7.2% of the females, 10 years or longer, and 1.5% of the males and 1.6% of the females, 15 years or longer.

This study, like every other study of this kind, is based on the duration of the clinical manifestations of degenerative coronary disease, not on the duration of the evolution of the structural pathology from its inception. The early phases of the latter, lasting many months or years, are undoubtedly asymptomatic in most cases and, therefore, antecede the clinical manifestations by that length of time. The entire duration of the evolution of structural coronary disease can, therefore, not be ascertained.

255 Eastern Pkwy.

THE ACTION OF PROCAINE AMIDE IN CARDIAC ARRHYTHMIAS

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and
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It has been demonstrated that procaine applied locally to the heart reduces cardiac irritability as indicated by the added intensity of stimulation necessary to induce extrasystoles or ventricular fibrillation.[1] It has also been shown that after procaine administration a larger dose of epinephrine is required to produce ventricular fibrillation during chloroform anesthesia.[2] Since the administration of procaine in man may be followed by untoward reactions, Burstein and others[3] studied the effect of less toxic substances chemically related to procaine. They found that several related compounds protected dogs from epinephrine-cyclopropane ventricular fibrillation. Brodie, Lief and Poet[4] demonstrated that procaine administered intravenously in man is hydrolyzed rapidly to paraaminobenzoic acid and diethylaminoethanol. Because of the high concentration and relative persistence of diethylaminoethanol in the plasma, Rosenberg and others[5] studied the effect of this compound on cardiac arrhythmias. The drug prevented the development of ventricular ectopic beats in dogs under cyclopropane anesthesia. It suppressed ventricular premature contractions for a variable period in human subjects and restored normal rhythm in six cases of ventricular tachycardia. Its usefulness was somewhat limited by its hypotensive effects and its relatively rapid transformation in vivo. Mark and others,[6] in a search for a drug having the activity of procaine without its toxicity, studied the action of various amides and esters of diethylaminoethanol. They found that the amide of procaine was the most promising in that this compound was not affected by the plasma enzyme that hydrolyzes procaine, plasma levels were well sustained, and the drug could be administered orally, since gastrointestinal absorption was complete. They reported the suppression of ventricular premature contractions in man and the termination of prolonged attacks of ventricular tachycardia in three

Fellow of the National Heart Institute (Dr. Miller).

Dr. Lewis H. Wright of E. R. Squibb & Sons supplied the procaine amide.

From the Division of Medicine (Cardiology), School of Medicine, University of Southern California, the Los Angeles County Hospital and the Medical Service, Cedars of Lebanon Hospital.

1. (*a*) Mautz, F. R.: The Reduction of Cardiac Irritability by the Epicardial and Systemic Administration of Drugs as a Protection in Cardiac Surgery, J. Thoracic Surg. **5**: 612, 1936. (*b*) Beck, C. S., and Mautz, F. R.: The Control of the Heart Beat by the Surgeon, Ann. Surg. **106**: 525, 1937.

2. Hermann, H., and Jourdan, F.: Cocaïne, et syncope adrénalino-chloroformique, Compt. rend. Soc. biol. **106**: 1153, 1931.

3. Burstein, C. L.; Marangoni, B. A.; DeGraff, A. C., and Rovenstine, E. A.: Laboratory Studies on the Prophylaxis and Treatment of Ventricular Fibrillation Induced by Epinephrine During Cyclopropane Anaesthesia, Anesthesiology **1**: 167, 1940.

out of four patients. Procaine amide differs from procaine only in having the amide grouping (CO.NH.) in place of the ester grouping (CO.O.) of procaine (fig. 1).

SUBJECTS CHOSEN AND METHOD OF STUDY

Our interest was chiefly in the action of procaine amide on rhythms of ventricular origin, since it has been claimed that procaine and diethylaminoethanol affect

TABLE 1.—*Types of Cardiac Disease in Which the Action of Procaine Amide Was Studied*

	No. of Patients
Chronic coronary disease	21
Rheumatic heart disease	9
Hypertension	7
Myocardial infarction	6
Congenital heart disease	1
Syphilitic heart disease	1
No organic heart disease	10

only such rhythms. However, a group of patients with auricular arrhythmias was also included. In order to eliminate the possibility of spontaneous variations in rhythm, only those patients who had very frequent and persistent premature systoles were selected. Patients who had frequent premature beats alternating with periods of normal rhythm were excluded. In the patients with ectopic tachycardias, the abnormal rhythm had been present for from one to 24 hours before the drug was administered.

PROCEDURE

The effect of an intravenous injection of procaine amide was studied in 55 patients with various disturbances in cardiac rhythm. (The types of cardiac disease are listed in table 1.) The usual dose was 500 mg.; however, in one patient 250 mg. was used, in two the dose was 400 mg., and in four patients with ventricular tachycardias, a second dose of 500 mg. was administered. At the outset of the study, the drug was administered slowly over a period of two to three minutes. It was found that there were no untoward reactions following a more rapid injection, and in some instances the dose was injected

TABLE 2.—*Effect of Procaine Amide in 55 Patients*

Type of Arrhythmia	No. of Patients	Result
Premature beats		
Ventricular	31	Ectopic beats eliminated in 26
Auricular	1	No effect
Auricular and ventricular	1	Ectopic beats reduced
Ectopic tachycardias		
Ventricular	8	Cessation of ventricular rhythm in 4, slowing of rate in 4
Supraventricular	4	Sinus rhythm in 3, slowing of rate in 1
Auricular fibrillation with ventricular premature beats	6	Sinus rhythm in 1, no effect in 5
	6	No effect on auricular fibrillation, premature beats eliminated

within one minute. However, the rapider injection seemed to have no advantage, and the slower rate appeared to be desirable. A control electrocardiogram was made before the administration of the drug and continued during, and for several minutes after, the injection. Records were then taken at five and 10 minute intervals for a variable period, in some instances for several hours. The pulse was palpated frequently by the observer and a record made whenever a disturbance in rhythm was detected. Frequent blood pressure readings were made and any evidence of untoward effect noted.

RESULTS

Of 55 patients who received procaine amide intravenously, the cardiac arrhythmia was modified in 46. Of 31 patients in whom the arrhythmia was due to frequent ventricular systoles, the ectopic beats were eliminated in 26. The effect was observed usually within one minute after the administration of the drug. Frequent auricular extrasystoles were not affected in one patient and in another case beats from auricular and ventricular foci were definitely reduced in frequency. The drug was administered in eight attacks of ventricular tachycardia. The rhythm was unmodified in four, but the rate was definitely reduced. In four instances the ventricular rhythm was abolished. Of four patients who had supraventricular tachycardias, sinus rhythm was restored in three. The drug was administered to 12 patients with auricular fibrillation. The arrhythmia was of the chronic type in 11 and was paroxysmal in one. In the latter patient sinus rhythm appeared within 90 seconds after the injection. It is possible that this effect may have been coincidental and not a result of the drug. However, the appearance of the sinus beats corresponded well with the usual onset of the drug action. In the 11 patients with chronic auricular fibrillation, the auricular rhythm was

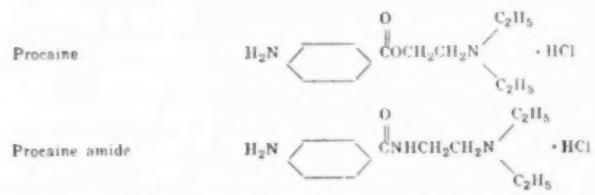

Fig. 1.—Structural formulas of procaine and procaine amide.

not modified. Six of these patients also had ventricular premature beats, and these were eliminated in each instance. Although the auricular fibrillation persisted, a slowing and widening of the fibrillation waves was observed. Table 2 shows the effects of the drug in the various arrhythmias. Typical effects of procaine amide are shown in figures 2 to 7.

COMMENT

The present observations indicate that procaine amide is very effective in abolishing ectopic beats and rhythms. Although our study deals chiefly with ectopic ventricular rhythms, there is evidence that supraventricular rhythms may also be influenced. In therapeutic doses, there are either mild untoward reactions or none. The mechanism of action of the drug requires further study. The fact that ventricular beats are more consistently affected suggests that the drug does not produce its effect entirely by a quinidine-like action. Quinidine sulfate inhibits both auricular and ventricular rhythms, and its action on the refractory period can be clearly demonstrated on the auricle of the experimental animal. The predominant

4. Brodie, B. B.; Lief, P. A., and Poet, R.: The Fate of Procaine in Man Following its Intravenous Administration and Methods for the Estimation of Procaine and Diethylaminoethanol, J. Pharmacol. and Exper. Therap. **94**: 359, 1948.

5. Rosenberg, B.; Kayden, H. J.; Lief, P. A.; Mark, L. C.; Steele, J. M., and Brodie, B. B.: Studies on Diethylaminoethanol: I. Physiological Disposition and Action on Cardiac Arrhythmias, J. Pharmacol. and Exper. Therap. **95**: 18, 1949.

6. Mark, L. C.; Berlin, I.; Kayden, H. J.; Rovenstine, E. A.; Steele, J. M., and Brodie, B. B.: The Action of Procaine Amide on Ventricular Arrhythmias, J. Pharmacol. and Exper. Therap. **98**: 21, 1950.

distribution of the sympathetic innervation is on ventricular rhythmic foci,[7] which suggests that procaine amide may exert its effect by a sympathetic blocking action. It has been demonstrated that the related compound diethylaminoethanol has potent sympatholytic action.[8]

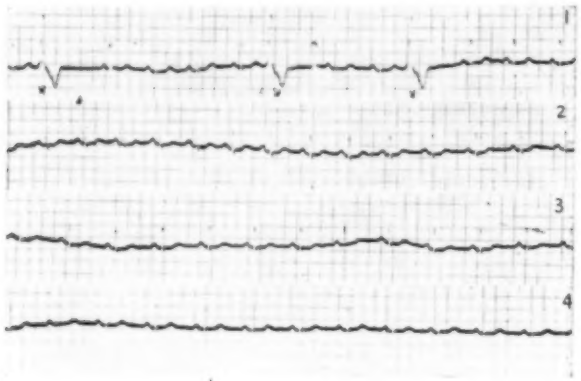

Fig. 2.—Electrocardiogram of patient M. S., a woman 45 years of age, who had frequent and persistent extrasystoles and one or two attacks of paroxysmal tachycardia daily for six months. During this period she was never free of consciousness of the heart beat for more than 3 or 4 seconds. After 400 mg. of procaine amide by vein, there was abolition of the premature beats with complete disappearance of the subjective sensations in the chest. Strip one shows the ventricular extrasystoles, strip 2, 3 and 4 taken two, ten and thirty minutes after the injection of the drug. The arrhythmia was almost completely controlled by the oral administration of 500 mg. three times a day.

Our reliance on the therapy of ventricular ectopic beats and rhythms has been almost entirely limited to the use of quinidine. Although this drug has been a great addition to cardiac therapeutics, it may at times fail to act. In two patients who were relieved of a ventricular tachycardia by procaine amide, previous administration of quinidine in adequate dosage had been ineffective. In emergencies such as prolonged exhausting attacks of ventricular tachycardia, the administration of quinidine

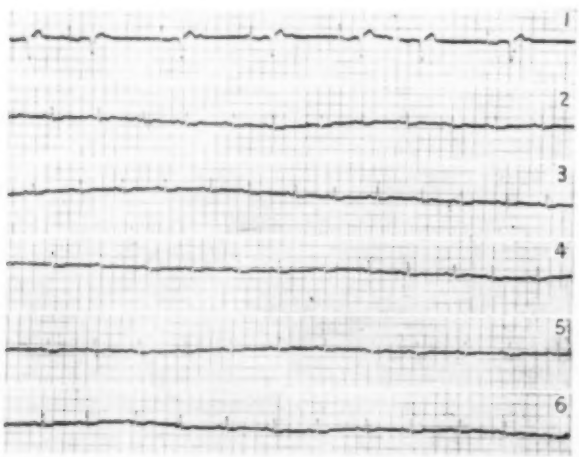

Fig. 3.—Electrocardiogram of patient S. S. Strip 1 shows a bigeminal rhythm, which was due to overdigitalization. Strips 2, 3, 4, 5 and 6 taken during, and five, ten, twenty and thirty minutes after, the intravenous administration of 500 mg. of procaine amide. Oral administration of 500 mg. of the drug every four hours controlled the arrhythmia.

by vein has been followed by severe reactions and an occasional fatal outcome. Procaine has been used effectively by vein in the therapy of ectopic ventricular rhythms. Although precautions in the mode of administration have reduced unfavorable reactions, unpredictable toxic effects may occur. Rovenstine and Popper[9] state "that effective intravenous procaine medication can be had by an amount of the drug that continuously provides mild toxic manifestations." They point out that more serious reactions may occur. Reactions to intravenous procaine amide were mild and infrequent. Occasionally, the patient complained of a bitter taste during the injection, and at times there was a flushing of the face. A moderate hypotensive effect was observed in some patients. In two patients with ventricular tachycardias a more marked drop in blood pressure was noted. It is possible that this reaction can be avoided by a slow injection of the drug. At the onset of our studies, the drug was injected at a slow rate. Since no untoward reactions were observed, the speed of administration was gradually increased. This rapider injection appeared to be well tolerated. Kayden[10] feels that the possibility of reactions may be reduced by a slower administration and suggests that the drug be injected at a rate of 200 mg. a minute. Since we have seen no definite advantage in a rapider rate, it would seem that the slower injection may be desirable. No hypotensive effects were observed after oral administration. Occasionally, mild to moderate gastric discomfort was noted, and three patients complained of a sense of "tension and jitteriness" while on maintenance doses of procaine amide by mouth.

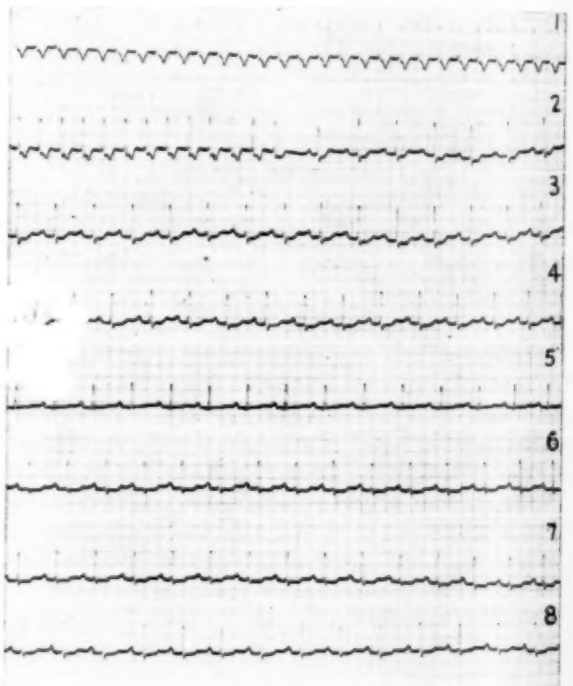

Fig. 4.—Electrocardiogram of patient F. Y. Strip 1 shows a supraventricular tachycardia, rate 184. Strip 2, taken during the intravenous injection of 500 mg. of procaine amide, shows the restoration of sinus rhythm. Lower strips taken one, five, ten, fifteen, twenty and sixty minutes after the administration of the drug.

Further experience may modify the clinical applications and the optimum dosage of the drug. For the present, it would appear that the drug is indicated in the therapy and prevention of ectopic beats and ectopic tachycardias. This includes the application of the drug in the prevention and therapy of arrhythmias occurring

7. Nathanson, M. H.: The Rhythmic Property of the Human Heart, Arch. Int. Med. 72: 613 (Nov.) 1943.

8. Freis, E. D.; Stanton, J. R., and Moister, F. C.: Sympatholytic Effects of Diethylaminoethanol in Man, Proc. Soc. Exper. Biol. and Med. 71: 299, 1949.

during anesthesia, especially in patients who require thoracic surgery. It would seem justifiable to use the drug routinely after a coronary thrombosis, in order to prevent serious arrthythmias, including ventricular fibrillation. It is now known that varying degrees of ventricular acceleration and ventricular fibrillation may be the basis of the Adams-Stokes attacks in heart block. No effective drug has been suggested for such attacks, but procaine amide appears to be indicated. The effectiveness of the drug in these situations must be determined by further observation.

As to the mode of administration and dosage, it appears that most arrhythmias can be controlled by the oral administration of the drug. For patients with prolonged attacks of ventricular tachycardia, it may be advisable to administer the drug by vein. Orally, the dose varies from 0.5 Gm. three times a day to 1.0 Gm. every three or four hours. Intravenously, a dose of 0.5 Gm. may be injected slowly and the response noted by observation of the heart rate or, preferably, by the electrocardiogram. If the ectopic rhythm persists or the heart rate is not effectively reduced, an additional 0.5 Gm. may be injected. Blood pressures should be recorded and the injection discontinued if a marked hypotensive reaction occurs. It should be pointed out that a definite

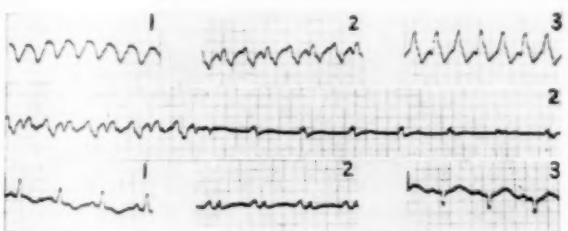

Fig. 5.—Electrocardiogram of patient L. M. Upper strips are leads 1, 2 and 3 showing a ventricular tachycardia, rate 160. This record was taken when the attack had been present for 18 hours, during which time the patient had received 400 mg. of quinidine sulfate orally every two hours. The middle strip shows the cessation of the ventricular rhythm, one minute and fifteen seconds after an intravenous injection of 500 mg. of procaine amide. The auricular waves are absent at this time but appear in the record taken an hour later, the lower strips.

reduction of the ventricular rate to 110 to 120, without restoration of sinus rhythm, may in some instances be considered a satisfactory response. The slower rate, although still idioventricular in origin, lessens the danger of cardiac or circulatory failure.

The duration of the effect of an intravenous administration of the drug was variable. In some patients occasional premature systoles appeared within six or seven minutes. In other instances the extrasystoles were absent after two hours of observation. It is probable that the duration of the normal rhythm is not related to the duration of the actual pharmacological action of the drug. Premature systoles and ectopic tachycardias have been ascribed to several mechanisms, and under different circumstances several factors may be operative. Clinical experience in the therapy of cardiac arrhythmias indicates that a drug may alter the abnormal mechanisms causing an arrhythmia and that the restored normal cycle of events in the heart persists after the drug action has subsided. It is not the rule for a therapeutically terminated ectopic tachycardia to recur when the effective mechanism has ceased to act. As illustrations, carotid sinus pressure or the injection of methacholine (mecholyl®) for supraventricular tachycardias have a brief physiological action, but if sinus rhythm is induced, it usually persists.

SUMMARY

Procaine amide was administered intravenously to 55 patients with various cardiac arrhythmias.

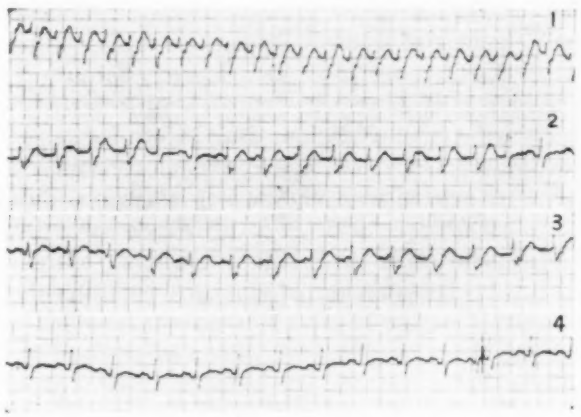

Fig. 6.—Electrocardiogram of patient A. S. Strip 1 shows a ventricular tachycardia, rate 164. Strip 2, taken after an intravenous injection of procaine amide, 500 mg., shows a rate of 114. Strip 3, taken after 800 mg. of procaine amide was administered, shows a rate of 100. Strip 4, taken after 1 Gm. of procaine amide shows sinus rhythm, rate 94.

Ectopic ventricular beats were usually abolished within one minute after the drug was injected.

Sinus rhythm was restored in three out of four attacks of supraventricular tachycardia.

Of eight attacks of ventricular tachycardia, normal rhythm was restored in four, and in four instances the ventricular rate was effectively reduced.

Sinus rhythm was restored in one instance of paroxysmal auricular fibrillation. In 11 patients with chronic auricular fibrillation, normal rhythm was not established. In six patients with auricular fibrillation and frequent ventricular extrasystoles, the ectopic beats were abolished and the auricular rhythm unaffected.

It was demonstrated that arrhythmias could be controlled by oral administration of the drug.

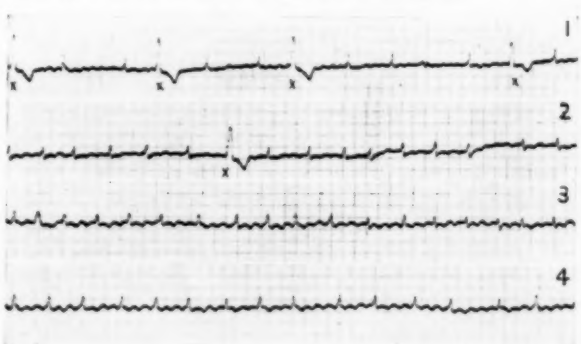

Fig. 7.—Electrocardiogram of patient D. A. Strip 1 shows auricular fibrillation and frequent ventricular extrasystoles. Strip 2, taken immediately after the intravenous injection of 500 mg. of procaine amide, shows only one extrasystole. Extrasystoles are absent in strips 3 and 4, which were taken five and ten minutes later, and were absent during an observation of one hour. The auricular fibrillation is seen to have persisted, but there is a slowing and widening of the fibrillation waves (strips 3 and 4).

The drug was well tolerated, and untoward reactions were infrequent and of a mild nature.

9. Rovenstine, E. A., and Papper, E. M.: The Therapeutic Role of Procaine and its Derivatives, Bull. New York Acad. Med. 25: 298, 1949.
10. Kayden, H. J.: Personal communication to the author.

DIGITALIS IN ACUTE MYOCARDIAL INFARCTION

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This study is concerned with the question: Does digitalis in therapeutic amounts increase the incidence of ectopic rhythms in the presence of myocardial infarction? The lack of a convincing answer is responsible for an unusual therapeutic paradox. Largely because of fear of induction of dangerous ectopic ventricular rhythms, digitalis, the most efficacious drug known for congestive heart failure, is given hesitantly for the congestive heart failure associated with myocardial infarction. The evidence that therapeutic doses of digitalis cause ventricular ectopic arrhythmias in the human with myocardial infarction is not convincing. The data presented largely comprise sporadic instances of arrhythmias associated with the use of the drug, which can be ascribed as logically to the coincidental use as to the effect of the drug. Clinical observations have been usually without an adequate control series.

Opinions as to the proper use of digitalis in myocardial infarction vary almost with the individual. One can find good authority for fearing digitalis or for not fearing it; for using it for early congestive failure or for using it only if the failure is progressive; for avoiding digitalis in certain stages or for using it at any stage; for giving small doses because of a supposed diminished tolerance or for giving digitalis in large doses intravenously because such patients respond only to large doses.[1] A recent report by Gilson and Schemm [2] of four cases in which paroxysmal ventricular tachycardia occurring in association with myocardial infarction disappeared after the administration of digitalis indicates the need for reexamining the role of the drug.

This paper is a study of the arrhythmogenic effect of a therapeutic dose of digitalis as determined in two groups of patients with proved myocardial infarction. They were similarly treated save for one variable: One group received digitalis.

MATERIAL

Over a period of several years alternate patients with myocardial infarction, proved by typical electrocardiographic patterns, have been given digitalis. This is a study of the first 100 patients.

To make the study more definitive, patients with serious complications were excluded. It was felt that an arrhythmogenic effect of digitalis upon an area of myocardial necrosis could be evaluated better in the absence of complications than in their presence. Patients moribund, in severe shock, or in obvious congestive failure on admission were excluded. Patients who had been receiving digitalis or quinidine prior to the attack were excluded. Those with any history of an arrhythmia prior to the infarct were excluded. If an arrhythmia was present at the onset, the patient was arbitrarily considered to have had the arrhythmia before the myocardial infarction, since in most instances it could not be proved otherwise. The group studied, therefore, comprised patients with proved myocardial infarction who were not apparently in any immediately critical condition. In all instances administration of the drug was started in the first week after the attack. Digitoxin was given in 0.2 mg. doses three times daily for two days and then 0.2 mg. once daily for the remainder of the hospital stay. Since the average stay was more than three weeks, the patients received digitoxin for more than two weeks. Digitoxin was given slowly because of studies indicating a lower requirement in myocardial infarction.[3] The first 16 patients were treated without bishydroxycoumarin, of whom 8 received digitalis; the remaining 84 patients received the drug during the hospital stay.

The period of study was the period of the hospital stay, or slightly less than four weeks. The objective criteria for evaluating the effect of digitalis, as defined at the outset of the study, were the number of deaths, the number of sudden deaths, and the frequency of disturbances of rate and rhythm. The heart of each patient was auscultated several times daily. Any disturbance in rate or rhythm was checked by electrocardiogram. It is important to know the length of time the heart is examined when one is evaluating the incidence of premature beats. In most cases it was a rule to listen for two minutes. Although admissible that occasional premature beats may have been missed owing to the small fraction of the 24 hr. covered, any error should apply equally to the two groups.

UNDERLYING HEART DISEASE

The two groups seemed to be comparable so far as the degree of underlying heart damage was concerned. The groups were analyzed as to age, sex, previous hypertensive cardiovascular disease, history of anginal pain prior to a month before the attack, or history of previous cardiac infarction. The ages ranged in one group from 45 to 85, and in the other from 39 to 82. The average age was 60.2 years in one group and exactly 60 in the other. The incidence of previous cardiovascular disease as evaluated from the history and examination was essentially the same in each group. A history of previous hypertensive cardiovascular disease, of anginal symptoms, or of previous episodes of cardiac infarction was obtained in 32 per cent of one group and in 34 per cent of the other. Despite the small number in each group, the distributions of these findings were remarkably similar (table 1).

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Drs. C. R. Stephenson, W. C. Goodwin, J. E. Meihaus, A. C. P. Bakos, C. B. Cherry, and A. F. Edwardes assisted in this study.

1. Askey, J. M.: Present Status of Digitalis in Therapy of Myocardial Infarction, Ann. West. Med. & Surg. **2**: 66 (Feb.) 1948.

2. Gilson, J. S., and Schemm, F. R.: The Use of Digitalis in Spite of the Presence of Ventricular Tachycardia, Circulation **2**: 278 (Aug.) 1950.

3. (*a*) Travell, J.; Gold, H., and Modell, W.: Effect of Experimental Cardiac Infarction on Response to Digitalis, Arch. Int. Med. **61**: 184 (Feb.) 1938. (*b*) Bellett, S.; Johnston, C. G., and Schecter, A.: Effect of Cardiac Infarction on the Tolerance of Dogs to Digitalis: Experimental Study, ibid. **54**: 509 (Oct.) 1934.

If one allows for the instances in which two conditions occurred in the same patient, there were 62 patients of the 100 in whom there had been previous infarction, previous hypertension, or previous angina. Our criteria for hypertension were blood pressure values over 150/90 on examination or a definite history of preexisting hypertension. The incidence of hypertension is lower than the percentage in an unselected group [4] (36 to 46 per cent), as would be expected.

EARLY CONGESTIVE FAILURE

Although obvious congestive failure was not present in any patient, findings suggesting early congestive failure were equally distributed in the two groups. The data necessary to make such a diagnosis in the presence of myocardial infarction are controversial. If a prolonged circulation time (more than 16 sec. from arm to tongue) is accepted as evidence of early left ventricular failure, the majority were in early congestive failure. Basal râles in the lungs were mentioned in about half of the patients in each of our groups studied. These findings are in accord with those of Selzer,[5] who found that patients with acute myocardial infarction had both a prolongation of the circulation time and a concomitant reduction in the vital capacity.

There is other evidence that pulmonary congestion occurs in most instances of myocardial infarction. Massie and Miller [6] examined the chests of 16 patients with myocardial infarction by X ray within 24 hr. of the acute attack. There was roentgenologic evidence of pulmonary congestion in 12 of the 16 patients, but only 7 of the patients had basal lung râles. Absence of lung râles does not rule out pulmonary congestion.

CIRCULATION TIME

Arm-to-tongue circulation times were determined with dehydrocholic acid (decholin®) on 54 patients during the first week. In only 10 of the 54 were times under 16 sec. recorded. In the majority they ranged between 20 and 30 sec. In 31 patients a second determination was made after one week. A group of 17 patients who were given digitalis at the onset of the attack had an average circulation time of 25 sec. at the onset. One week later the circulation time was 18 sec. A group of 14 patients who received no digitalis had an average circulation time of 22 sec. at the onset and 17 sec. after one week.

RESULTS

The results for the two groups are remarkably similar (table 2). The low mortality rate, 8 per cent (in a private hospital where the over-all mortality rate is around 20 per cent), is a reflection of a selected group, free from complications. The slight difference in the number of deaths and in the incidence of sudden death is probably insignificant. Among the first 16 patients who received no bishydroxycoumarin, there was one death in the group that received digitalis and one death in the group that received no digitalis.

The incidence of auricular fibrillation and of auriculoventricular conduction defects is within the expected range. A number of arrhythmias were present at the onset of the attack and were excluded. Two patients on admission had complete auriculoventricular heart block, two had auricular fibrillation, and seven had ventricular premature beats. The elimination of those patients who showed premature beats at the onset of the attack probably removed from the study a large percentage of those in whom ectopic contractions would develop from the effect of the cardiac infarction alone. Experimentally, ectopic beats develop immediately or within eight hours in animals whose coronary arteries are ligated.[7] It is probable that the above excluded arrhythmias present at the onset resulted from the myocardial infarction, but it could not be proved that they were not present before. The preponderance of the ventricular ectopic beats in the group receiving no digitalis was surprising. There were four instances of ventricular premature beats; in two instances there occurred runs of three or more ectopic beats, the initial stage of ventricular paroxysmal tachycardia. Normal sinus rhythm returned in both instances after a few injections of quinidine, and both patients survived. In the single patient in whom ventricular premature beats developed among the 50 who received digitalis, occasional ectopic beats occurred after three weeks just prior to discharge from the hospital.

TABLE 1.—*Distribution of Different Factors in the Two Groups*

	No. of Patients	Average Age, Yr.	Sex *	Percentage of Patients with: Previous HCVD †	History of Angina	Previous Infarction
Without digitalis..	50	60.2	72	28	16	20
With digitalis.....	50	60	70	28	24	16

* The values represent the percentages of males.
† HCVD indicates hypertensive cardiovascular disease.

TABLE 2.—*Numbers of Deaths and Arrhythmias in Patients with Acute Myocardial Infarction*

	Patients	Deaths	Sudden Deaths	Arrhythmias: Auricular Fibrillation	A. V. Block	Ventricular Premature Beats *	Incipient Ventricular Paroxysmal Tachycardia
Digitalis given.	50	3	2	3	2 (partial)	1	0
No digitalis....	50	5	3	2	1 (partial)	2	2 †

* One patient given digitalis had occasional auricular premature beats. One patient receiving no digitalis had an occasional auriculoventricular nodal premature beat.
† Runs of three or more premature beats.

COMMENT

With the limited clinical material available it has taken over three years to observe 100 cases, too small a number to allow inductive conclusions. It does represent,

4. Doscher, N., and Poindexter, C. A.: Myocardial Infarction Without Anticoagulant Therapy, Am. J. Med. **8**: 623 (May) 1950.
5. Selzer, A.: Circulation in Acute Myocardial Infarction, Arch. Int. Med. **76**: 54 (July) 1945.
6. Massie, E., and Miller, W. C.: The Heart Size and Pulmonary Findings During Acute Coronary Thrombosis, Am. J. M. Sc. **206**: 353 (Sept.) 1943.
7. Smith, F. M.: The Ligation of Coronary Arteries with Electrocardiographic Study, Arch. Int. Med. **22**: 8 (July) 1918. Harris, A. S.: Delayed Development of Ventricular Ectopic Rhythms Following Experimental Coronary Occlusion, Circulation **1**: 1318 (June) 1950.

however, an attempt at a carefully controlled clinical study. Certain significant facts developed from the study.

Fifty patients with proved myocardial infarction were given digitalis in effective doses without development of any dangerous ventricular rhythms. These results are contrary to what was expected, based on the experimental work on animals and the opinions of clinicians. If digitalis increases the excitability of the necrotic myocardial focus, it theoretically should have increased the incidence of ectopic ventricular rhythms. In this study the group that received digitalis actually had fewer ventricular premature beats. It cannot be deduced from the small series that this difference is significant. The results, however, emphasize the need for the reexamination of the role of digitalis in the presence of myocardial infarction.

The evolution of the fear of digitalis in myocardial infarction has been gradual. In Herrick's [8] original classic paper of 1912, he advocated the routine use of digitalis. Hamman [9] in 1926 said: "The patient should be promptly and fully digitalized. . . .Not only is the digitalized heart better prepared to withstand the added burden of certain arrhythmias should they come on, but it is also stimulated to put forth its best efforts. How desirable the best efforts may be when a large area of heart muscle is infarcted, needs no further comment." Gradually reports of ventricular paroxysmal tachycardia resulting from excessive amounts of digitalis appeared. Since both myocardial infarction and digitalis in toxic doses were capable of inducing the hazardous arrhythmia, digitalis in smaller dosage was assumed to have an additive effect if given in the presence of cardiac infarction. Experimental work done on animals [3] following ligation of coronary vessels showed that only three-fourths as much digitalis was required to cause a ventricular ectopic rhythm and death as in the normal animal. Other work indicated a lessened tolerance of the heart to digitalis after experimental infarction.[3b] The resultant caution advised in the use of digitalis was interpreted by many as a reasonable indication for using the drug only for desperate situations. As Levine [10] expressed it, "It is this very vulnerability of the heart to digitalis in coronary artery disease and coronary thrombosis that, among other conditions, has militated against its use in those conditions." These animal studies, however, are only evidence of a lower lethal dose of digitalis in the presence of myocardial infarction. There has been no study made of the effect of varying doses of digitalis upon the incidence of ventricular premature beats which occur following ligation of a main coronary artery in animals.

The precise place for the use of digitalis needs further elucidation. It is questionable if the results derived from experiments on animals with normal arteries and hearts and under abnormal conditions can be applied to man without more critical appraisal. It is questionable if animal experiments can answer adequately the questions and solve the problems that confront the clinicians. The ultimately significant data must be logically obtained from observation of the effect of digitalis on man who has suffered a spontaneous myocardial infarction. Such data must be of sufficient amount to permit statistical analysis. The role of digitalis could best be determined by some mass study such as led to the rapid elucidation of the role of bishydroxycoumarin in the treatment of myocardial infarction. Such studies are the joint responsibility of many qualified institutions.

Until such studies are completed, I feel justified in using digitalis more freely in the presence of myocardial infarction. Instead of following the common advice to use digitalis only if congestive failure is progressive, or to withhold it until unmistakable signs of both right and left ventricular failure are present, it would seem wiser to administer the drug for the early signs and symptoms. Basal lung râles probably should not be regarded as transitory unimportant findings, but should be routinely supported by other data such as determination of the circulation time and of the vital capacity. If early left ventricular failure is suspected to be present, there is no evidence in this study to support a policy of withholding digitalis until signs of marked failure appear.

The recent report of Schemm [11] would indicate that the profession has been failing to take full advantage of a valuable drug. Thoreau said, "It is never too late to give up our prejudices. No way of thinking, however ancient, can be trusted without proof."

SUMMARY

In a group of 50 patients with proved myocardial infarction and no obvious complications, the administration of digitalis in therapeutic amounts, started in the first week and continuing throughout the hospital stay, induced no more ventricular ectopic rhythms or instances of sudden death than occurred in a control group of 50 treated without digitalis.

Without further evidence the fear of catastrophic arrhythmias should not be cited as a deterrent to the use of average doses of digitalis for the early signs and symptoms of congestive heart failure in myocardial infarction.

8. Herrick, J. B.: Clinical Features of Sudden Obstruction of the Coronary Arteries, J. A. M. A. **59**: 2015 (Dec. 7) 1912.

9. Hamman, L.: The Symptoms of Coronary Occlusion, Bull. Johns Hopkins Hosp. **38**: 273 (April) 1926.

10. Levine, H. D.: Abnormal Rapid Rhythms Associated with Digitoxin Therapy, Ann. Int. Med. **29**: 822 (Nov.) 1948.

11. Schemm, F. R.: Digitalis in Cardiac Disease Without Congestive Heart Failure or Auricular Fibrillation, Postgrad. Med. **7**: 385 (June) 1950.

Striving Toward Better Methods.—Prof. John Dewey's definition of a good man is a man who is constantly getting better. This is particularly applicable to the definition of a good doctor, namely, one who is constantly getting better. Medicine itself is improving by the day, and woe betide the doctor who stands still, because medicine is moving so fast that he is soon left behind. You have got to keep swimming or you will sink. The great trouble with the devotees of cults in the healing art is that they profess to have found the true and only way to heal the sick. They are shackled by their creeds, and stagnate in fundamentalist doctrines. Whereas regular medicine, dissatisfied with its limitations, is constantly striving toward better methods of preventing sickness and healing the sick.—Conrad Wesselhoeft, M.D., Some Remarks on the Privilege of Practicing Medicine, *The Diplomate*, February 1951.

RS-T SEGMENT, T WAVE AND HEART RATE AFTER TWO STEP AND 10 PER CENT ANOXEMIA TESTS

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and,
Arthur M. Master, M.D., New York

The Master "two step" test and the anoxemia test of Levy are accepted as useful objective tests in the diagnosis of coronary artery disease.[1] These tests are particularly valuable in those cases in which coronary artery disease is suspected, but clinical examination and resting electrocardiogram are negative. In both procedures, the first by means of standardized exercise, the second by inhalation of a 10 per cent oxygen mixture, relative anoxemia of the myocardium is produced, which in persons with heart disease will be most frequently revealed by certain abnormal electrocardiographic findings—each test having its own criteria for an abnormal response.

Since abnormal electrocardiographic changes may occur in normal persons subjected to excessive exercise,[2] and negative tracings may result in persons with coronary disease if the exercise is insufficient, the exercise employed in the two step test has been standardized for age, weight and sex. The criteria for an abnormal electrocardiographic response in this test are:

1. Depression of the RS-T segment below the isoelectric level (P-R level) of more than 0.5 mm. in leads 1, 2 or 4.

2. Change from an upright T wave to an isoelectric or inverted T wave (or change in T wave in the opposite direction).

3. Presence of arrhythmia immediately after exercise, which was not present before exercise, and which reverts to normal, e. g., A-V block.

The Levy anoxemia test is based on the inhalation of a mixture of 10 per cent oxygen and 90 per cent nitrogen that is passed through water. Flutter valves are incorporated in the apparatus, so that rebreathing is avoided. A tank of 100 per cent oxygen is incorporated in the circuit, so that oxygen can be administered quickly if needed. Levy's criteria for a positive test are:

1. The sum of the RS-T deviations in leads 1, 2, 3 and 4 F should be greater by 3 mm. or more than in the control tracing.

2. Partial or complete reversal of the direction of the T wave in lead 1, accompanied by RS-T deviation of 1 mm. or more in this lead.

3. Complete reversal of the direction of the T wave in lead 4 F regardless of any associated RS-T deviations in this lead.

In the routine two step test resting control electrocardiographic tracings are taken with limb leads and all chest leads from 1 to 6. Tracings using the three limb leads and the chest V_4 position are recorded immediately after exercise and again at the end of two minute and six minute intervals. If these tracings do not return to normal limits, another electrocardiogram is made at the end of 10 minutes.

In the routine anoxemia test a resting electrocardiogram is made as a control. Tracings are taken at five minute intervals during inhalation of the 10 per cent oxygen-nitrogen mixture, then one minute after inhalation of 100 per cent oxygen and again five minutes after breathing room air.

METHOD

For this study the Master two step test and the Levy anoxemia test were carried out on 23 patients who had normal resting electrocardiograms but histories of precordial pain of varying degrees of severity. To permit detailed comparison of the results of the two tests, tracings were taken at one minute intervals for 10 minutes after exercise and at one minute intervals for 20 minutes during the anoxemia test. Our purpose was to compare heart rate, RS-T segments and T waves at various time intervals and to determine whether or not changes, if occurring during the 10 per cent anoxemia test, corresponded at any time interval to changes observed following the two step exercise test. Since in both tests the criteria are based chiefly on RS-T deviations and T wave changes, changes in the P wave and Q, R and S deflections were not considered of importance for this study. In all cases the tests were given on different days but within a day or two of each other and under as nearly similar conditions as could be obtained. In the two step test use of the Sanborn cardiette* made it possible to complete the electrocardiogram within 30 to 40 seconds after exercise. All records before and after exertion were made with the patient recumbent in bed. The isoelectric reference point for RS-T deviations was the P-R level, and the depression of the RS-T segment was measured from this base.

Table 1 shows the incidence of sex and age distribution in the series of 23 patients. All these patients were ambulatory.

In table 2 a comparison of the heart rate immediately following the two step exercise test and the heart rate at the end of the longest period of inhalation of 10 per cent oxygen in the anoxemia test is given. The latter period was 20 minutes except in those cases in which the test

Research Assistant, Cardiographic Laboratory, Mount Sinai Hospital (Dr. Storch); Cardiologist and Chief of the Cardiographic Laboratory, Mount Sinai Hospital (Dr. Master).

1. (*a*) Master, A. M., and Oppenheimer, E. T.: A Simple Exercise Tolerance Test for Circulatory Efficiency with Standard Tables for Normal Individuals, Am. J. M. Sc. **177**: 223, 1929. (*b*) Master, A. M.: The Two-Step Test of Myocardial Function, Am. Heart J. **10**: 495, 1935. (*c*) Levy, R. L.; Williams, N. E.; Bruen, H. G., and Carr, H. A.: The "Anoxemia Test" in the Diagnosis of Coronary Insufficiency, Am. Heart J. **21**: 634, 1941. (*d*) Patterson, J. E.; Clark, T. W., and Levy, R. L.: A Comparison of Electrocardiographic Changes Observed During the "Anoxemia Test" on Normal Persons and on Patients with Coronary Sclerosis, Am. Heart J. **23**: 837, 1942. (*e*) Weintraub, H. J., and Bishop, L. F., Jr.: Anoxemia Test for Coronary Insufficiency, Ann. Int. Med. **26**: 741, 1947. (*f*) Twiss, A., and Sokolow, M.: Angina Pectoris: Significant Electrocardiographic Changes Following Exercise, Am. Heart J. **23**: 498, 1942. (*g*) Grossman, M.; Weinstein, W. W., and Katz, L. N.: The Use of the Exercise Test in the Diagnosis of Coronary Insufficiency, Ann. Int. Med. **30**: 387, 1949. (*h*) Puddu, V., and Massafia, A.: Considérations sur l'épreuve electrocardiographique d'effort, Acta cardiol. **2**: 340, 1947.

2. Feil, H., and Pritchard, W. H.: The Electrocardiogram of Anginal Attacks Induced by Exercise, Mod. Concepts Cardiovas. Dis., April 1946, vol. 15.

had to be stopped. In table 2 will also be found the most rapid heart rate observed during the tests in each case and also the positive and negative responses. The results are correlated with age, sex and previous clinical diagnosis. The most rapid heart rate in the two step exercise test was present in the electrocardiogram taken immediately after exertion except in two cases. In these the heart rate was most rapid at the end of one minute after exercise; thereafter it dropped quickly to the resting level. In the anoxemia test no correlation was found between the period of anoxemia and the heart rate. The heart rate generally increased with the duration of anoxemia but not as much as it did in the two step exercise test. Furthermore, in some patients the heart rate fluctuated considerably during the entire period of anoxemia. The heart rate was most rapid during the first 10 minutes in 17 of the 23 patients. In 10 instances the heart rate was highest during the first five minutes. Not at any time was there correlation between the heart rate during periods of anoxemia and the heart rate after exercise. This was true when the results of the two tests were the same and also when they differed. It should be noted however that four of the negative anoxemia tests were stopped before the full 20 minute period of anoxemia, two were discontinued at 18 minutes, one at 12 minutes and one at eight minutes. Three of the positive anoxemia tests were stopped at 11, five and three minutes respectively. Even in these seven tests that were suspended before the full 20 minutes had elapsed the most rapid heart rate was present at the longest period of anoxemia in but two instances, one a negative and one a positive test.

TABLE 1.—*Age and Sex Distribution*

Age, Yr.	No. of Cases	Sex	
		Male	Female
21-30	2	1	1
31-40	1	1	0
41-50	5	3	2
51-60	9	7	2
61-70	6	6	0
Totals	23	18	5

In table 3 is a comparison of the maximum RS-T segment depression in each lead with the time interval at which this depression appeared during the test. It is important to note that the depression of the RS-T segment was measured from the isoelectric base line (P-R level). In the exercise test RS-T segment depressions appeared most frequently in lead 2, then in leads 1, 3 and 4 in that order. The deepest RS-T segment depressions, however, appeared in lead 4, then in leads 2, 1 and 3 in that order.

In the anoxemia test no correlation was present between the degree of RS-T segment depression and the period of anoxemia, nor could any correlation be made between the period of anoxemia and the time interval following the two step exercise test with regard to RS-T segment depression. The anoxemia test thus differed from the two step exercise test, in which 95 per cent of the maximum RS-T segment depressions appeared in the tracing made immediately after exercise.

The maximum RS-T depression, like the maximum heart rate, when present in the two step test, occurs in the tracing recorded immediately after exercise in the great majority of patients. Analyzing each of the standard limb leads and the chest 4 position, the following is found:

Lead 1: All the maximum RS-T depressions occurred in the tracing taken immediately following exercise.

Lead 2: All the maximum RS-T depressions occurred in the tracing immediately after exercise.

Lead 3: In case 10, a negative test, the greatest RS-T segment depression occurred in the five minute tracing. In the others the greatest RS-T depression was in the immediate recording.

Lead 4: In case 20 the greatest depression occurred in the two minute tracing. In the others the maximum RS-T depressions occurred in the immediate tracing.

In the tracings taken immediately after exercise when RS-T segment depressions of over 0.5 mm. occurred they were present in lead 1 in 89 per cent of the cases, in lead 2 in 100 per cent, in lead 3 in 71 per cent and in lead 4 in 71 per cent. However, the lead that showed the deepest RS-T segment depressions was lead 4, then leads 2, 1 and 3 in that order.

Analysis of depression of the RS-T segment in the anoxemia test shows the following results:

Lead 1: In three positive cases the maximum RS-T segment depressions occurred at 20 minutes (case 13); two minutes (case 14), and at two minutes (case 15).

Lead 2: In five positive anoxemia tests the maximum RS-T segment depressions appeared at 20 minutes (case 13); four minutes (case 14); two minutes (case 15); 11 minutes (case 16), and at 10 minutes of anoxemia (case 17).

Lead 3: In two positive cases the maximum RS-T depressions appeared at two minutes (case 14), and at 15 minutes (case 16).

Lead 4: In three positive cases the greatest RS-T segment depressions appeared at 20 minutes (case 13); three minutes (case 15), and at nine minutes (case 17).

Again it is to be noted that even in those cases where the test was discontinued the maximum RS-T segment depressions were not always present at the longest period of anoxemia.

Table 4 shows in each lead the height of the T wave in the immediate tracing of the exercise test and at the longest period of anoxemia in the anoxemia test (which was at the 20 minute period unless the test had to be suspended).

Analysis of the table shows that, as has been generally thought, the T wave is reduced in height after exercise or anoxemia.[3] However, this reduction did not occur in all cases in this study. In fact, the T wave in lead 3 became taller in 52 per cent of the cases in the tracing immediately after exercise. In addition, in lead 4 the number of cases that showed heightening of the T wave and lowering of the T wave was the same.

In the two step test the T wave in the tracing made immediately after exercise changed as follows:

Lead 1: In 52.2 per cent of the cases the T wave became smaller; in 13 per cent of the cases it became taller, and in 34.8 per cent it remained unchanged.

3. (*a*) Baum, W. S.; Malmo, R. B., and Sievers, R. F.: A Comparative Study of the Effects of Exercise and Anoxia upon the Human Electrocardiogram, J. Aviation Med. **16**: 422, 1945. (*b*) Biörck, G.: Anoxemia and Exercise Tests in the Diagnosis of Coronary Disease, Am. Heart J. **32**: 689, 1946.

Lead 2: In 52.2 per cent of the cases the T wave became smaller; in 17.4 per cent of the cases it became taller, and in 30.4 per cent it remained unchanged.

Lead 3: In 17.4 per cent of the cases the T wave became smaller; in 52.2 per cent of the cases it became taller, and in 30.4 per cent it remained unchanged.

Lead 4: In 39.1 per cent of the cases the T wave became smaller; in 39.1 per cent of the cases it became taller, and in 21.8 per cent of the cases it remained unchanged.

In none of the 23 cases was a positive exercise test based solely on T wave changes. In those cases in which abnormal T wave responses did occur there were also abnormal RS-T segment alterations (cases 13, 14 and 15).

In the anoxemia test the T wave was altered as follows at the 20 minute or other greatest period of anoxemia (in those cases in which the test was discontinued before the full 20 minute period of anoxemia was reached the height of the T wave at the minute at which the test was stopped was used):

Lead 1: In 60.9 per cent of the cases the T wave became smaller; in 8.7 per cent of the cases it became taller, and in 30.4 per cent it remained unchanged.

Lead 2: In 47.8 per cent of the cases the T wave became smaller; in none of the cases did it become taller, and in 52.2 per cent it remained unchanged.

Lead 3: In 39.1 per cent of the cases the T wave became smaller; in 17.4 per cent of the cases it became taller, and in 43.5 per cent it remained unchanged.

Lead 4: In 47.8 per cent of the cases the T wave became smaller; in 8.7 per cent of the cases it became taller, and in 43.5 per cent of the cases it remained unchanged.

In one case there was complete reversal in the direction of the T wave in lead 4 F, i. e., an inversion, and this occurred at the 19 minute period of anoxemia; the T wave measured –0.5 mm. After one minute of 100 per cent oxygen the T wave became upright to a height of 1 mm. and remained upright. This was the only one of the positive anoxemia cases that was based on the criterion of T wave inversion in lead 4 alone.

TABLE 2.—*Comparison of the Heart Rate Immediately Following Exercise and at Period of Greatest Anoxemia, Showing the time at which the Maximum Heart Rate Appeared in Each Test*

Case	Sex	Age, Yr.	Result Tests		Heart Rate		Time of Appearance of Maximum Heart Rates				Diagnosis
							2 Step		Anoxemia *		
			2 Step	10% Oxygen	Immed. After 2 Step	Period of Greatest Anoxemia	Rate	Time	Rate	Time, Min.	
1	M	35	—	—	130	75	130	Immed.	80	1	Normal adult
2	F	41	—	—	75	76	75	Immed.	100	2	Normal adult
3	M	25	—	—	118	100	118	Immed.	115	14	No heart disease; diabetes mellitus
4	M	46	—	—	120	80	120	Immed.	80	4	Normal adult
5	M	67	—	—	110	80	110	Immed.	80	10	No heart disease; chronic bronchitis with hypertrophic emphysema
6	M	46	—	—	100	80	100	Immed.	80	15	Normal adult
7	M	52	—	—	100	95	100	Immed.	95	20	Normal adult
8	M	52	—	—	125	78	125	Immed.	93	5	Normal adult
9	F	52	—	—	75	106 †	78	1 min.	106	12	Normal adult
10	M	54	—	—	92	56	92	Immed.	64	3	Normal adult
11	M	55	—	—	115	70	115	Immed.	80	6	Normal adult
12	M	67	—	—	68	54 †	72	1 min.	72	9	Normal adult
13	M	62	+	+	80	75	80	Immed.	80	15	Arteriosclerotic heart disease
14	M	52	+	+	125	100 †	125	Immed.	110	3	Arteriosclerotic heart disease
15	M	54	+	+	125	110 †	125	Immed.	110	3	Arteriosclerotic heart disease
16	M	54	+	+	115	98	115	Immed.	110	7	Arteriosclerotic heart disease
17	M	45	+	+	106	85 †	106	Immed.	85	6	Arteriosclerotic heart disease
18	M	61	+	—	115	75 †	115	Immed.	76	1	Arteriosclerotic heart disease; diabetes mellitus
19	M	70	+	—	100	— 88 †	100	Immed.	88	2	Arteriosclerotic heart disease; diabetes mellitus
20	F	50	+	—	145	100	145	Immed.	105	18	Arteriosclerotic heart disease; diabetes mellitus
21	F	51	+	—	120	100	120	Immed.	100	1	Essential hypertension
22	M	64	+	—	90	68	90	Immed.	78	10	Normal adult
23	F	27	+	—	150	78	150	Immed.	78	7	Rheumatic heart disease, sinus rhythm, mitral stenosis and insufficiency

* The time given for the highest heart rate in the anoxemia test is the time of such rate's first appearance.
† In case 9 the anoxemia test was stopped at 12 minutes, in case 12 at 18 minutes, in case 14 at five minutes, in case 15 at three minutes, in case 17 at 11 minutes, in case 18 at eight minutes and in case 19 at 18 minutes. In all other cases the full 20 minute period of anoxemia was completed.

No untoward reactions were encountered in any of our patients during the two step exercise test, and each of the 23 two step tests were completed. During the anoxemia test, however, a shocklike state appeared in one of the patients who was positive by both tests (case 17) after 11 minutes of 10 per cent oxygen, and the test was stopped. One hundred per cent oxygen with cardiorespiratory stimulants was administered successfully. In another patient (case 9), negative by both tests, the anoxemia test was stopped after 12 minutes, because the patient showed generalized cyanosis that became progressively worse. One hundred per cent oxygen was again administered successfully. In addition, the anoxemia test was also stopped before completion in one patient who was negative by both tests, in two patients who were positive by both tests and in two patients who showed positive two step tests but negative 10 per cent anoxemia

tests. A review of these five cases showed that in one (case 12) the anoxemia test was stopped after 18 minutes of 10 per cent oxygen, because the patient exhibited severe dyspnea; in another (case 14) the test was stopped after five minutes, because the patient complained of severe precordial pain; in another (case 15) the test was stopped after three minutes, because the patient complained of severe substernal and precordial pain; in another (case 18) the test was stopped after eight minutes, because the patient complained of marked precordial oppression; in the other (case 19) the test was stopped after 18 minutes, because the patient complained of severe precordial pain.

TABLE 3.—*Time of First Appearance of Maximum RS-T Depressions in Two Step Exercise Test and Anoxemia Test**

	Result Tests		Lead 1				Lead 2				Lead 3				Lead 4			
			2 Step		Anoxemia		2 Step		Anoxemia		2 Step		Anoxemia		2 Step		Anoxemia	
Case	2 Step	10%	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.	RS-T, Mm.	Time, Min.
1	—	—	−0.25	Imm.	0	..	0	..	0	..	0	..	0	..	0	..	0	..
2	—	—	−0.25	Imm.	0	..	−0.25	Imm.	0	..	0	..	0	..	−0.25	Imm.	−0.25	1
3	—	—	0	..	0	..	0	..	−0.50	18	0	..	−0.50	8	0	..	0	..
4	—	—	0	..	0	..	0	..	0	..	0	..	0	..	0	..	0	..
5	—	—	0	..	0	..	0	..	0	..	0	..	0	..	0	..	0	..
6	—	—	0	..	0	..	0	..	0	..	0	..	0	..	0	..	0	..
7	—	—	0	..	0	..	0	..	0	..	0	..	0	..	0	..	0	..
8	—	—	0	..	0	..	0	..	0	..	−0.25	Imm.	0	..	−0.25	Imm.	0	..
9†	—	—	−0.25	Imm.	0	..	−0.25	Imm.	−0.75	12	0	..	−0.25	1	−0.25	1	−1.75	12
10	—	—	0	..	0	..	0	..	0	..	−0.25	5	−0.25	9	0	..	0	..
11	—	—	0	..	0	..	0	..	0	..	0	..	0	..	0	..	0	..
12†	—	—	0	..	0	..	0	..	0	..	0	..	0	..	0	..	0	..
13	+	+	−1.25	Imm.	−2	20	−1.25	Imm.	−3.25	20	0	..	0	..	−5	Imm.	−4.75	20
14†	+	+	−0.25	1	−0.50	2	−1.25	Imm.	−2	4	−1	Imm.	−1	2	−0.50	1	0	..
15†	+	+	−1.5	Imm.	−1	2	−1	Imm.	−1	2	0	..	0	..	−2.5	Imm.	−3	3
16	+	+	0	..	0	..	−0.50	Imm.	−0.25	11	−0.50	4	−0.50	15	−0.50	Imm.	0	..
17†	+	+	0	..	0	..	−0.50	Imm.	−0.50	10	0	..	0	..	−3	Imm.	−2.5	9
18†	+	—	−0.75	Imm.	0	..	−0.75	Imm.	−0.50	6	−0.25	Imm.	0	..	−1.5	Imm.	0	..
19†	+	—	0	..	0	..	−1	Imm.	0	..	−0.50	Imm.	0	..	−1	Imm.	0	..
20	+	—	−0.25	Imm.	0	..	−0.25	Imm.	0	..	0	..	0	..	−1.75	2	0	..
21	+	—	0	..	0	..	−1	Imm.	−1	4	−0.50	Imm.	−0.25	1	−0.50	Imm.	−0.75	20
22	+	—	0	..	0	..	−0.50	Imm.	0	..	0	..	0	..	−0.50	4	0	..
23	+	—	−1	Imm.	−0.50	2	0	..	0	..	0	..	0	..	−1	Imm.	0	..

* "0" signifies no change during the test; "Imm." signifies an immediate appearance of the maximum RS-T depression following the two step test.
† In case 9 the anoxemia test was stopped at 12 minutes, in case 12 at 18 minutes, in case 14 at five minutes, in case 15 at three minutes, in case 17 at 11 minutes, in case 18 at eight minutes and in case 19 at 18 minutes. In all other cases the full 20 minute period of anoxemia was completed. (These data also apply to table 4.)

TABLE 4.—*Comparison of Control Height of T Wave in Each Lead of Two Step Exercise and Anoxemia Tests**

	Tests		Lead 1				Lead 2				Lead 3				Lead 4			
			2 Step		Anoxemia		2 Step		Anoxemia		2 Step		Anoxemia		2 Step		Anoxemia	
Case	Two Step	10% Oxygen	Cont.	Max.	Cont.	Max.	Cont.	Max.	Cont.	Max.	Cont.	Max.	Cont.	Max.	Cont.	Max.	Cont.	Max.
1	—	—	2.5	2.5	1.5	1.5	1.5	2.5	1	1	−1.5	−0.5	−1.5	−1.5	6	7	7	7
2	—	—	3.25	3	2.5	2	2.5	2	1.5	1.5	−2	−2	1	−1.75	3.25	3.5	5	3.5
3	—	—	2.5	1	2	1	3	2	3.5	0.5	0.5	1	0.5	−0.5	8	6	6.5	3.5
4	—	—	1.5	1	1.25	1.25	1.5	0.75	1	1	0	0	0	0	4	6	4	4
5	—	—	1	1	1.5	1	3	3	3	3	1.5	2.25	1.5	1.5	5	5	7	7
6	—	—	1.5	2	1.5	1.5	2	2.25	2.5	2.5	0.25	0.25	1.5	1	6	5	3	3
7	—	—	2.25	1.5	2.5	1.75	3	3.5	4	3	1.5	1.5	1.5	1	8.5	6	10	7
8	—	—	4	2.75	3.5	3	4	2.5	3	2	0	0.75	−0.5	−1	3	3	4	5
9	—	—	2	2	1.5	0.5	2.5	2.5	3	1	0.5	1	1.5	0.75	5	3.5	7	4.5
10	—	—	2.5	2	2.25	2.5	1	1	1.25	1	−1.5	−1	−1	−1.25	3	5	4	4
11	—	—	1.5	1.5	1.5	1	2	3	2.5	2	0.5	0.5	0.5	0.5	2.5	3.5	3	3
12	—	—	3	2	2	2	3	4	3	3	1	3	1	1	5	6	4.5	4.5
13	+	+	3	−2	2.25	−3	1.5	−2	1.25	−2.5	−1.5	1	−1.5	1	10	−6	11	−7
14	+	+	1.5	1	1.5	1	1	1	1	0.5	−1.5	0	−1	−2	7	7	9	11
15	+	+	1.5	0	2.5	0	1.25	1	1.5	0	−0.5	0.5	−1	1.5	6	3.5	8.5	0.5
16	+	+	1	1	0.75	0.5	1.5	2	2.5	2.5	1	2	2	2	1.5	2	0.25	−0.75
17	+	+	2	2	2	2	2.5	2.5	3	3	1.25	1.25	1.75	1.75	5	4	5	5
18	+	—	0.25	1	0.25	0.5	2	1	2	2	1.75	0.25	1.5	1.5	4	4	3.5	3.5
19	+	—	1.5	2.25	2	1	3	2.5	2.5	1.5	1.75	1.5	1	1	4.5	2.5	4	2.5
20	+	—	3	2	3	3	2	2	3	2	−1	−1	−0.5	−1	5	5	7	4
21	+	—	1.5	1.5	2.5	2	3.5	3	3	3	1.5	2	1	1.5	5	6	3.25	3
22	+	—	1	1	1.5	0.5	2	1.5	2	2	0.5	1	0.5	1	4.5	4	8	6.5
23	+	—	3	2	3	3	4	3	3	3	1.5	1	1	1	4	7	4	4

* The T wave height was recorded immediately after exercise and at the period of greatest anoxemia. The T wave height is given in millimeters; a diphasic T wave is recorded as "0."

In these five cases rapid administration of 100 per cent oxygen (which as previously explained is incorporated in the circuit) relieved the symptoms rapidly. In a short review of the anoxemia tests as an aid in the diagnosis of coronary insufficiency Levy [4] mentions the

precautions that must be taken before an anoxemia test is to be performed:

1. The control record should leave no doubt with regard to any recent myocardial infarction.

2. The test should not be repeated within 24 hours.

3. The test should not be done in the presence of congestive heart failure.

4. The test should not be done if cardiac infarction is known to have occurred within the preceding four months.

In none of the cases in this series were any of the above stated conditions present before the anoxemia test was performed.

COMMENT

Heart Rate.—The heart rate in the two step exercise test reached its maximum immediately on cessation of effort in all but two cases. In these cases the maximum was attained one minute after exercise. In some cases the heart rate rose slightly after a definite fall. Although the heart rate generally increased during the anoxemia test, the increase was not nearly so great as the increase that occurred after the exercise test. In some cases the cardiac rate fluctuated considerably during the entire period of anoxemia. The patient's nervous reaction to the test, with the associated reflex and sympathetic phenomena, must have played an important part in these fluctuations. Furthermore, variation in oxygen saturation or unsaturation of the blood during anoxemia [5] contributes to fluctuation in heart rate.

It is believed that the increase in heart rate after exercise is due in large part to decrease in vagal tone and to some extent to increased activity of the sympathetic nervous system.[6] Increased venous return through the Bainbridge reflex also tends to increase the heart rate after exercise starts.[7] In experimental work with dogs, Gasser and Meek [7] found that after destruction of the nervous system connections to the heart marked acceleration occurred after exercise. This observation tends to confirm the opinion that such factors as the direct action of epinephrine on the heart contribute to increase in heart rate after exercise.

During the anoxemia test the lowering of the oxygen tension in the inspired air causes decrease of arterial oxygen tension, with consequent lowering of oxygen saturation.[5] This effect is partly compensated by the increase in heart rate that results from decrease in vagal tone, increase in sympathetic nervous system activity and perhaps from direct action on the sino-auricular node.[8]

RS-T Segment and T Wave.—Exercise or anoxemia in a patient with diminished cardiac reserve due to coronary arterial disease intensifies existing abnormalities in the cardiac muscle. Changes may also be created in the physicochemical state of the myocardium when the work of the heart is increased, while its oxygen supply is decreased by inadequacy of the coronary blood flow. This condition exists in coronary insufficiency, which according to Master [9] "is a deficiency of the coronary circulation due to a discrepancy in the demands of the myocardium and its available oxygen or blood supply." Areas of ischemia with "injury" or "injury" alone may be created for a variable period with resultant alterations in the RS-T segments and the T wave of the electrocardiogram. These changes may not be related to pathological changes; they may be completely transient and "unattended by demonstrable structural changes." [10] The electrophysiological responses in and about the areas of ischemia and "injury" may have been changed by alteration of the normal depolarization and repolarization mechanism of the cardiac muscle.[11] Wolferth showed that trauma to the endocardium produced negative RS-T segment potential changes at the ventricular epicardial surface.[12]

The RS-T segment depressions and T wave changes that are the significant electrocardiographic alterations produced by the two step and anoxemia tests are generally seen in patients with involvement of the subendocardial layers of the myocardium. Schütz showed that moderate suction on the myocardium of the left ventricle, with the exploring electrode over the left ventricle on the chest wall, produced anoxemia of the subendocardium that resulted in RS-T segment depression in the electrocardiogram.[13] It is believed that the increased work of the myocardium following exercise and anoxemia causes the greatest and earliest strain on the subendocardium for the following reasons (Master,[14] Schütz,[13] Scherf,[15] Lepeschkin,[16] Puddu,[1h] Cabrera [17]):

1. The subendocardial layers are supplied by the terminal branches of the arteries.

2. These layers experience the greatest compression exerted on the myocardium during systole.

3. The duration of systole is longer in the internal than in the external layers of the heart. In effect, the papillary muscles that form part of the internal layers must relax last so that the valves hold until the end of systole.

In the electrocardiograms of normal persons taken after exercise the auricular T wave (T_a) becomes more

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pronounced and may cause depression of the RS-T segment below the isoelectric line. This change is largely due to the tachycardia, but increased sympathetic tone may also play a part. It has, however, little importance in our results and those of others [5b] since the T_a wave has been shown to be very small at the rates produced by each test. Hyperventilation in the anoxemia test may be a factor in RS-T segment and T wave changes in the normal patient, since it is known that decrease in carbon dioxide content of the blood and the resultant alkalosis produce RS-T segment changes and T wave inversions.[18] The small amount of exercise demanded by the two step test has not in our experience caused sufficient hyperventilation to produce false positives. Likewise, acidosis may alter RS-T segments and T waves.[19] However, the slight shift toward blood acidity produced by formation of metabolites such as pyruvic acid and lactic acid, following exercise or anoxemia as carried out in the Master exercise and Levy anoxemia tests, has not been shown to be a cause of pathological alterations in the RS-T segment and T waves.

In our investigation the positive anoxemia tests have infrequently shown only T_4 inversions. Among the present series of 23 patients T_4 inversion was the sole alteration in only one of the positive anoxemia tests. This patient had, however, a positive exercise test, and a diagnosis of arteriosclerotic heart disease was made.

In an attempt to explain the normal results that anoxemia tests sometimes give in patients with known myocardial involvement, Malmström [5b] points out that these persons have a great capacity for increasing alveolar ventilation and thus keep their alveolar and arterial oxygen tension on a relatively high level during the test. This may explain the negative anoxemia tests that were obtained in five of our patients who had known myocardial disease and in one who later proved to have organic heart disease, all of whom responded positively to the two step exercise test.

It has been suggested by some authors that our criteria for a positive exercise tolerance test are too liberal. In recent review of the Master two step test Grossman, Weinstein and Katz [1g] concluded that 0.75 mm. RS-T depression or more in a limb lead and 1.5 mm. or more in a chest lead were more accurate criteria for a positive exercise test. Many other authors [20] have suggested that similar or greater increases in the depth of the RS-T deviations should be adopted as criteria for a positive test. They believe that with more liberal standards false positive tests will be rare. We are of the opinion that the more liberal the criteria the less sensitive will be the test and the less its value. In this connection it should be stressed that we employ as the zero line the central isoelectric level (P-R level) and not the control height of the RS-T segment. When the single two step test is negative the patient is given the double two step test, in which the number of trips and the time interval are doubled, so that the rate of effort remains the same. In a small proportion of cases in which cardiac disease was believed to be present in spite of a negative single two step test the double two step was of value in establishing the diagnosis.

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SUMMARY

1. Twenty-three patients with normal resting electrocardiograms but with histories of precordial pain were given the two step exercise tolerance test and the 10 per cent anoxemia test. In the exercise test electrocardiograms were taken each minute for 10 minutes after exercise; in the 10 per cent anoxemia test electrocardiograms were taken each minute for 20 minutes during the administration of 10 per cent oxygen.

2. The most rapid heart rate in the two step exercise test was present in the electrocardiogram taken immediately after the exertion. In the 10 per cent anoxemia test there was no correlation between the period of anoxemia and the heart rate. The heart rate generally increased with the period of anoxemia but not so much as it did in the two step exercise test. Furthermore, in some patients the heart rate fluctuated considerably during the entire period of anoxemia.

3. RS-T segment depressions of over 0.5 mm. in the electrocardiograms taken immediately after the end of exercise were most frequent in lead 2, then lead 1, lead 4 and lead 3. Lead 4 showed the deepest depressions, then leads 2, 1 and 3 in that order. In the 10 per cent anoxemia test no correlation was present between the degree of RS-T segment depression and period of anoxemia; nor could any correlation be made of RS-T segment depression with the period of anoxemia and the time interval following the two step exercise test. This may be due to the varying oxygen saturation of the blood during the anoxemia test.

4. In both the 10 per cent anoxemia and the two step exercise tests the T wave is generally reduced in height; however, in a small percentage the amplitude of the T wave is increased. These changes could not be predicted in either test.

5. In this series the two step test was more sensitive and of greater diagnostic aid than was the anoxemia test. Positive two step tests appeared in the six patients who were known to have organic heart disease. The anoxemia test was negative in these six cases. Although a positive anoxemia test was considered reliable, a negative anoxemia test was not found to be dependable.

6. No untoward reactions occurred in any of the patients during the two step exercise test. During the anoxemia test a shocklike state developed in one of the patients, severe cyanosis in another and severe precordial or substernal pain in five others.

7. Examination of the material presented in this paper makes it apparent that there are many differences in the electrocardiographic responses produced by the two tests. They cannot be used interchangeably.

POTASSIUM DEFICIENCY IN BULBAR POLIOMYELITIS

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During the past several years there have been an increasing number of reports concerning potassium deficiency in many clinical conditions, including infantile diarrhea,[1] alkalosis due to intestinal and pyloric obstruction and vomiting,[2] and in many postoperative patients.[3] Our studies on potassium metabolism in surgical patients have led us to investigate many other conditions we believed might be associated with a deficiency of potassium. Three cases of bulbar poliomyelitis in which the electrolyte metabolism was studied are reported.

REPORT OF CASES

CASE 1.—A woman aged 29 was admitted to Cook County Contagious Hospital on Sept. 13, 1950, with a history of dysphagia of two days' duration. This dysphagia was manifested by inability to swallow, accumulation of saliva, and a "full feeling in the throat." Temperature was 102.4 F., pulse 100, and respirations 20. A nasal twang, slight redness of the pharynx, paralysis of the soft palate, and a moderate amount of accumulated secretion in the mouth were present. Nuchal rigidity was slight. Neuromuscular examination revealed a head drop but no apparent weakness of the extremities. Reflexes were normal. A diagnosis of bulbar poliomyelitis was made. Treatment consisted of placing the patient in the Trendelenberg position and intravenous administration of the usual fluids. On the following day the temperature had risen to 103.6 F.; and the bulbar symptoms were prominent, but there was no evidence of lower motor paralysis or respiratory difficulty. This course continued until Sept. 15, when cyanosis was noted and a tracheotomy was performed. On Sept. 16 the patient was afebrile; her color was good and her respiration strong, but she was still unable to swallow. Intravenous fluids were administered daily. On Sept. 19 the patient responded poorly and became cyanotic, and her respiration was shallow and irregular. A portable respirator was applied immediately, and oxygen was administered. The patient responded and her color returned, but she was markedly lethargic. Laboratory studies on this day disclosed the following: serum potassium 3.5 mEq. per liter (in our laboratory normal is considered 4.2 to 5.8 mEq. per liter), sodium 135 mEq. per liter, chloride 89 mEq. per liter and CO_2 combining power 77 volumes per 100 cc. Treatment with intravenous potassium chloride was instituted. Twelve grams of potassium chloride was administered on Sept. 19 and 20. Blood chemistry studies were performed daily, and on Sept. 21 the serum potassium was 5.0 mEq. per liter, sodium 138 mEq. per liter, chloride 98 mEq. per liter and CO_2 combining power 58 volumes per 100 cc. Clinically the patient was markedly improved. She asked to be removed from the respirator. Her respirations were regular and her color excellent, and less secretions were noted in the throat and pharynx. The patient continued to receive 4 gm. of potassium chloride intravenously daily until tube feedings were instituted. By Sept. 23 the patient was considered out of danger, and two days later the tracheotomy tube was removed. Tube feedings were begun and tolerated on the following day.

CASE 2.—A young woman aged 18 was admitted to the Cook County Contagious Hospital on Sept. 8, 1950, with fever, headache and difficulty in swallowing of two days' duration. A spinal tap was performed at another hospital and showed a pleocytosis consisting of 374 cells per cubic millimeter, predominantly lymphocytes. Physical examination revealed a very apprehensive white woman who was in no acute distress. Temperature was 104 F. (rectal); pulse, 88; and respirations, 22. There was a palatal deviation to the left and a left facial weakness. The neck was rigid. There was only a slight weakness of the left thigh muscles, but the reflexes were normal. A diagnosis of poliomyelitis was made, and therapy consisting of Trendelenberg position and parenteral fluids was instituted. This clinical course continued with some progression of symptoms to Sept. 14, when the patient was afebrile. At this time she had a marked left facial, hypoglossal, iliopsoas, and quadriceps paralysis and right gluteus medius weakness. Treatment consisted of physical therapy, hot packs, and intravenous fluids. On Sept. 19 the serum potassium was 3.9 mEq. per liter, and the sodium, chloride, and the CO_2 combining power were normal. Treatment with intravenous potassium chloride was instituted. On that day and the following day she received a total of 14 gm. of potassium chloride. On Sept. 21 the serum potassium was 4.7 mEq. per liter and the patient was much improved. She was clearer mentally, stronger, and more cheerful, but still unable to take oral fluids. Two grams of potassium chloride was administered daily until Sept. 25, when gavage feedings were instituted.

CASE 3.—A boy aged 9 yr. was admitted to the Cook County Contagious Hospital on Sept. 19, 1950, with a history of fever, lethargy, and weakness of the left leg. Two days before admission the patient began vomiting, and his mother noted a nasal twang to his voice. Physical examination revealed an extremely lethargic white boy, whose temperature was 101 F. (rectal); pulse, 100; respirations, 30. The patient had a head drop, a marked nuchal rigidity, and positive Kernig's and Brudzinski's signs. There was some pharyngeal weakness, but other reflexes were normal. Spinal tap revealed 56 cells per cubic millimeter, 60% of which were lymphocytes. Treatment consisted of parenteral fluids and Trendelenberg position. On Sept. 21 the serum potassium was 3.9 mEq. per liter, and potassium therapy was instituted. On Sept. 21 and Sept. 22 he received a total of 8 gm. of potassium chloride. The serum potassium on Sept. 23 was 4.6 mEq. per liter, the patient was afebrile, his sensorium was clear, and he was able to take oral nourishment.

These patients were unable to swallow due to the pharyngeal paralysis. Two of the patients had received the usual parenteral fluids without potassium for at least 10 days. The patients showed marked loss of strength and energy and were listless and lethargic. They were treated with intravenous potassium chloride. Twenty-four hours later the clinical condition of all three patients had markedly improved; lethargy and listlessness were absent and their energy had increased a great deal. This clinical response was dramatic. The marked improvement was obvious to all members of the medical and nursing staffs, and the patients themselves commented on their increased strength and sense of alertness.

The three cases of bulbar poliomyelitis reported are from the services of Drs. Leichenger, Hoyne, and Rosi.

From the Hektoen Institute for Medical Research of the Cook County Hospital. Solomon Foundation Fellow, Karl A. Meyer Fellowship, (Dr. Lans); Solomon Foundation Fellow (Dr. Stein), and Hektoen Institute Fellow (Dr. Becker).

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COMMENT

Paralysis of the pharyngeal musculature is very frequent and troublesome in patients with bulbar or encephalobulbar poliomyelitis. This results in difficulty or inability to swallow, associated with regurgitation. The inability to swallow necessitates the use of intravenous and subcutaneous fluids to provide nutrition and prevent dehydration. Dehydration in patients involves not only the problem of water depletion but an imbalance of electrolytes. Since patients with bulbar poliomyelitis often require prolonged parenteral alimentation, the electrolyte and fluid balance of these patients becomes important.

The usual parenteral solutions contain little or no potassium; therefore, patients sustained on these fluids alone receive inadequate potassium. In addition, solutions containing sodium chloride without potassium, increase the renal excretion and further deplete the body store of potassium.[4] As a consequence of the reduced intake of food, the oral intake of potassium is decreased. Thus, the continued loss through vomiting,[5] and daily urinary excretion,[6] without adequate intake, leads to potassium deficiency. In dehydrated patients the serum potassium level may be normal even though a severe cellular deficiency is present; after these patients are hydrated, a low serum potassium is often found. Certain signs and symptoms are known to be associated with a potassium deficiency,[7] including loss of strength and energy, listlessness, and anorexia. Weakness of the extremities develops and progresses to flaccid paralysis. Sometimes an ascending or Landry's type of paralysis may be present. Cranial nerves are rarely involved. Weakness of respiratory muscles is often marked; paralysis of the intercostal muscles and diaphragm may be present. Breathing becomes rapid and shallow, and use of accessory muscles and gasping respiration become evident. In the absence of prompt potassium therapy, respiratory paralysis and death may ensue.

Patients with bulbar poliomyelitis have a limited respiratory reserve and must be watched closely and carefully for evidence of respiratory failure. Any condition which further decreases the patient's ability to breathe will increase the mortality. Weakness and paralysis of respiratory muscles are often present in potassium deficiency. Patients with bulbar poliomyelitis cannot tolerate the superimposed symptoms of a potassium deficiency. Therefore, adequate intake of potassium must be provided these patients to prevent the occurrence of these additional symptoms.

Excellent reviews of potassium deficiency and its treatment have been presented by Bodansky,[7a] Randall,[2b] Danowski,[7b] Darrow,[7c] and Elkinton and Tarail.[6a] Solutions containing varying concentrations of potassium salts have been advocated by these authors and we are investigating the use of these solutions. In patients with renal insufficiency or dehydration, administration of potassium salts must be cautiously given and only under constant and proper clinical and laboratory supervision. Rapid intravenous injection of concentrated solutions may lead to a high serum level which is toxic to the heart and cause heart block and cardiac arrest. It is necessary to regulate the rate of introduction to avoid a toxic level of potassium in the serum. Therefore, at present, a solution containing 2 to 3 gm. of potassium chloride in a liter of normal saline, 5% or 10% dextrose or amino acids, is recommended for general use. This solution should be administered not faster than 8 to 12 cc. (120-180 drops) per minute.

The patient with bulbar poliomyelitis should receive daily adequate amounts of intravenous fluids containing dextrose, sodium chloride, and amino acids in order to maintain hydration, electrolyte balance, and nutrition. When potassium deficiency is found to be present, 2 to 3 gm. of potassium chloride should be added to each liter of intravenous fluid so that the patient receives 6 to 12 gm. of potassium chloride a day.

This treatment is continued until the serum potassium level has been normal for 24 hr., after which 4 gm. of potassium chloride should be administered daily to provide a minimal daily intake of potassium. Most foods are a good source of potassium; therefore, parenteral potassium therapy is no longer needed after the patient can be fed.

SUMMARY AND CONCLUSIONS

Three patients with bulbar poliomyelitis were found to have a potassium deficiency. Treatment of the existing deficiency with intravenously administered potassium chloride resulted in a marked improvement of their condition.

Patients suffering from bulbar poliomyelitis who are unable to eat will develop a potassium deficiency unless adequate potassium intake is provided. Severe, prolonged potassium deficiency can be lethal. This condition when present in patients with bulbar poliomyelitis may be a contributing factor in the high mortality rate. Proper treatment of electrolyte imbalance in these patients is essential and must include adequate potassium therapy. Further studies are indicated concerning the relationship of potassium deficiency to the clinical picture and mortality of poliomyelitis.

ADDENDUM

Since preparation of this report, three additional patients with bulbar poliomyelitis were found to have a marked hypopotassemia. Institution of intravenous potassium chloride therapy resulted in a prompt and definite clinical improvement in all three patients.

629 S. Wood St.

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TREATMENT OF UREMIA BY PERFUSION OF AN ISOLATED INTESTINAL LOOP

SURVIVAL FOR FORTY-SIX DAYS AFTER REMOVAL OF THE ONLY FUNCTIONING KIDNEY

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and
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In 1946, de Leeuw and Kolff [1] treated a patient with contracted kidneys and uremia by dialysis through an intestinal loop. A loop of small intestine was separated by transverse sections and the ends brought out through lateral stab wounds, leaving the vasculature intact. The continuity of the remaining intestine was restored by end-to-end anastomosis. The isolated intestinal loop was perfused. Rinsing fluid from a reservoir was let into the proximal end of the intestinal loop after passage through a Murphy drip and through a thermostatically controlled bath to bring it up to body temperature. From this first patient 5 gm. of urea could be removed in 10 hours of perfusion.

Since then, all our patients with severe chronic uremia were treated with a forced high-caloric, low-protein diet according to the principle of Borst. Conditions demanding intestinal dialysis rarely occurred.

Odel and Ferris,[2] Seligman, Frank and Fine,[3] and Ask-Upmark [4] in Sweden have also attempted to treat patients by intestinal dialysis. While the outcome in these patients and in ours was for various reasons unsatisfactory, enough evidence has accumulated to establish the fact that intestinal dialysis can remove sufficient urea to maintain urea balance. White and Harkins [5] concluded that irrigation of intestinal loops would remove fairly large amounts of urea, but it did not prolong the life of the nephrectomized animals because of severe disturbance in the electrolyte pattern of the blood. It is therefore most important to find a rinsing fluid that will not disturb but will even correct the patient's water and electrolyte balance.

Visscher [6] and his group confirmed the conclusion of Heidenhain that forces other than those of normal osmosis determine the rate of water transport, and they prove that sodium chloride can move into the blood against a large concentration gradient, but solutions from which there was a significant water absorption were definitely hypotonic.

We [7] have performed more than 200 intestinal perfusions on dogs in order to find a suitable rinsing fluid. A concentration of 100 to 200 mg. per 100 ml. of sodium chloride in the lavage fluid usually prevented chloride absorption or excretion by the intestinal mucosa when the flow rate was 1 to 1.5 L. an hour. To prevent water absorption, the lavage fluid had to contain substances which are absorbed slowly or not at all by the intestinal mucosa (such as sucrose or magnesium sulfate). The composition of the lavage fluid had to be such that it was isotonic with or slightly hypertonic to plasma. Like Claus Brun in Copenhagen,[8] we compared the freezing point depression of plasma and lavage fluid, taking care that the freezing point of the lavage fluid was never below that of the blood plasma. Potassium and calcium salts were added to prevent calcium and potassium loss during lavage.

REPORT OF CASE

On March 15, 1949, a right nephrectomy was performed on a 36 year old man for infected hydronephrosis. Anuria followed, and the patient was transferred to our hospital. On cystoscopic examination, it proved impossible to pass a catheter through the ostium of the left ureter. After 10 days of practically complete anuria, an exploratory laparotomy was done. The left kidney region was found to be empty. A small piece of tissue could be felt at the level of the third lumbar vertebra. Since it was concluded that there was no adequate remnant of kidney, a loop was prepared from 2.5 m. of the midsection of the small intestine, and the two orifices were sutured into the abdominal wall. The continuity of the remaining intestine was restored by end-to-end anastomosis. Data on this patient are shown in charts 1 and 2.

Diuresis.—The left aplastic kidney was able to produce some urine. The total amount of urine produced over 46 days was 6.4 L., or 140 ml., a day. The total urea excreted in the urine was 28 Gm., or 0.6 Gm. a day.

Blood Urea.—There was a steady rise of blood urea, which increased to 369 mg. per 100 ml. on the sixteenth day after the nephrectomy. This level was lowered a little by cautious daily perfusion through the intestinal loop from the 16th to the 18th day. The patient was treated with the Kolff rotating artificial kidney on the 19th and the 24th day after nephrectomy. Seventy-two and 53 gm. of urea, respectively, were removed by these procedures, and the blood urea was reduced to 167 mg. per 100 ml.

On the 29th day a new series of perfusions through the isolated intestinal loop were performed. As may be seen from chart 1,

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This study was done at the Department of Internal Medicine of the Municipal Hospital (Head, W. J. Kolff), Kampen, Netherlands.

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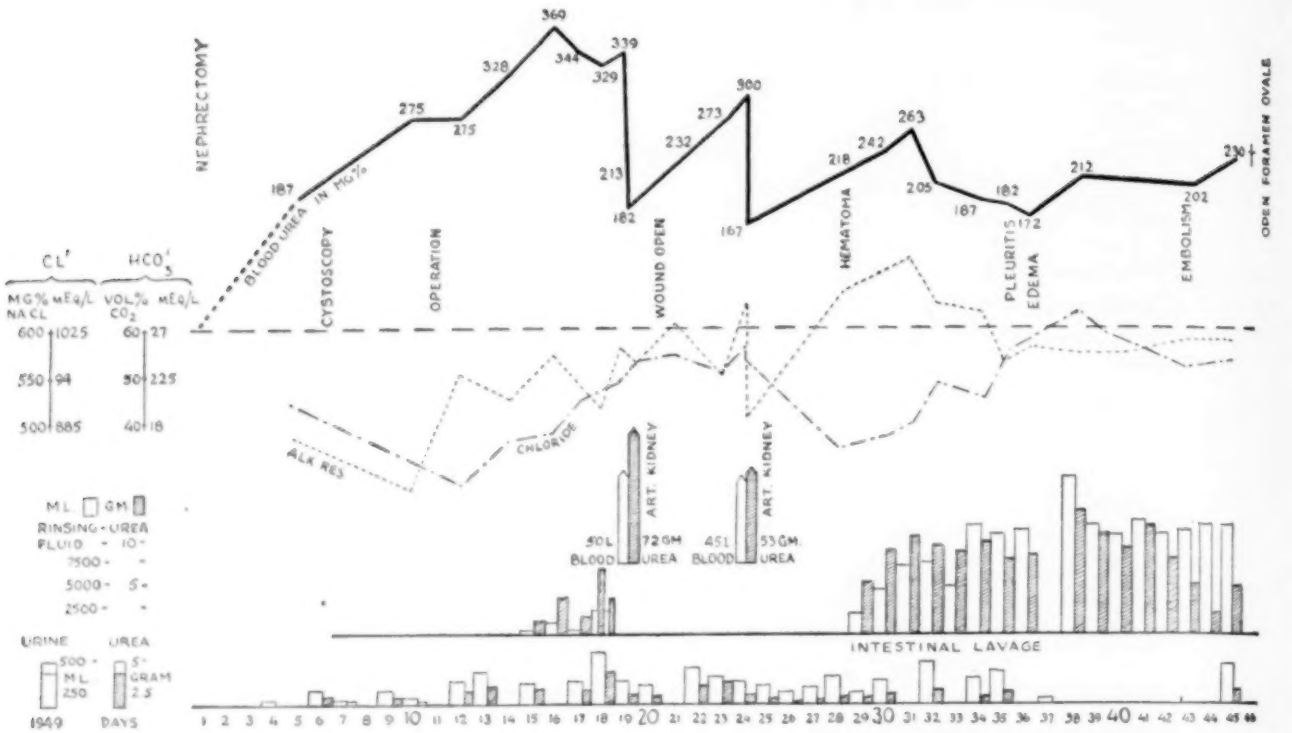

Chart 1.—A 36 year old man had his only functioning kidney removed on the day when the first point of this graph begins. His blood urea in mg. per 100 ml. is shown in the broken line. Note that it was twice reduced by treatment with the artificial kidney and that it stayed about 200 mg. from the 32d to the 45th day. On the lowest line the unshaded blocks indicate the total amount of urine produced each 24 hours by the patient's aplastic left kidney (an average of 140 ml. a day), and the shaded blocks indicate the total amount of urea excreted by this kidney (an average of 0.6 gm.). On the second line from the bottom the unshaded blocks indicate the amount of rinsing fluid that perfused the isolated intestinal loop and the shaded blocks indicate the amount of urea removed in one dialysis (an average of 8.6 gm. per 10 hours). ----- indicates the normal average value of blood urea, plasma chloride, and alkali reserve; . . . . . indicates Cl-, and ..... HCO_3-.

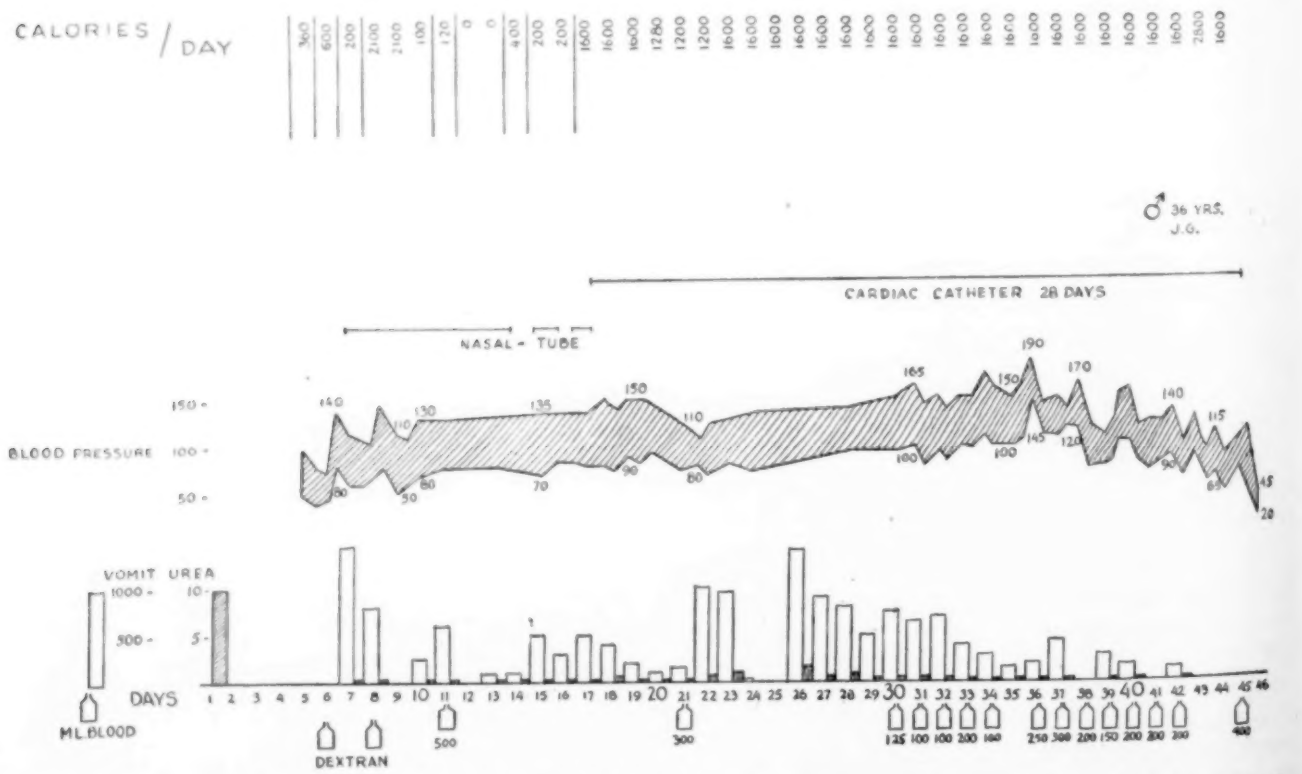

Chart 2.—This is a graph of the same patient as in chart 1. The same number of days after nephrectomy is shown at the bottom of the graph. The bottles indicate infusions with dextran, blood or amigen to counteract low blood pressure. Unshaded blocks indicate the amount of vomitus. Vomiting decreased after 36 days. The negligible amount of urea found with vomitus is indicated by shaded blocks. The blood pressure as indicated by the shaded area rose to 190/145 when the patient had edema, but decreased when water and sodium were withdrawn. Calories per 24 hours, given by mouth, tube or cardiac catheter, are shown at the top. The considerable amount of calories resorbed from the intestinal loop has not been taken into account.

the blood urea fell from 263 to 172 mg. per 100 ml. and was kept at a level of about 200 mg. until shortly before the death of the patient. He suffered from complete anuria during nine of these last 16 days.

Dietary Treatment.—It proved impossible to feed this continuously vomiting man with a butter-and-sugar diet according to Borst's principle. Feeding by gastric tube was attempted, but even this proved impractical. The amounts of vomitus are recorded in chart 2. The amounts of urea removed with the vomitus proved to be negligible. On the 17th day after the nephrectomy, a thin polyvinyl plastic cardiac catheter was inserted to feed the patient with 1 l. of 40% dextrose a day, to which were added heparin sodium (100 to 200 mg.), insulin, penicillin, vitamin C and vitamin B complex. In this way, with 1 L. of 40% dextrose, 1,600 calories could be provided every 24 hours without the risk of overloading the patient with fluid (deKeyser, Van Eekhoutte, Kop and Kolff).[9] Moreover, sodium chloride and sodium bicarbonate could be added as seemed necessary. The cardiac catheter was left in place for 28 days. No signs of local irritation were observed. The patient's general condition was fair except for vomiting, but the latter state improved gradually on the 36th day.

Complications.—On the 20th day there was disruption of the laparotomy wound, and it had to be sutured. This event forced us to postpone intestinal perfusion until the 29th day. On the 28th day, a hematoma developed in the abdominal wall; it may have been due to the constant vomiting and the necessary heparinization. The heparin dosage was temporarily decreased. This may have permitted the formation of small thrombi along the catheter. These thrombi probably gave rise to small emboli, which accounted for some pulmonary symptoms. More serious, however, were small emboli which first appeared in the legs and hands, reminiscent of those in bacterial endocarditis. On the 42nd day the patient suddenly became unconscious and new emboli were observed in the hands and feet. When he awakened he was partly paralyzed and for some time aphasic. We still did not dare to remove the cardiac catheter, although feeding could be performed by way of the intestinal loop. There was no other method of supplying daily infusions of blood, dextran and a protein hydrolysate (aminosol or amigen®) needed to sustain the blood pressure, which showed a tendency to fall. Since embolism continued, the catheter was removed on the 45th day. The patient became comatose and died the day after. At autopsy there were slight generalized edema and arterial emboli in the hands. The left kidney was hypoplastic and hydronephrotic. Its length was 6 cm. The renal cortex was atrophic and 1.5 mm. broad. The left ureter was dilated above and constricted in its course through the bladder wall. A long thin cylindrical thrombus was present that contained a lumen large enough to pass the catheter and indicated where it had lain in the veins and in the right auricle. Apart from this thrombus, the endocardium presented a smooth and undamaged surface. An open foramen ovale explained how emboli from the catheter thrombus entered the greater circulation. (Afterward we heard that three years previously the patient had suffered from a sudden attack of unconsciousness, which then was also thought to be a cerebral vascular accident.) The right kidney was absent. There was an old hemorrhage in the left adrenal gland.

COMMENT

Urea.—Chart 1 shows that during the period of daily intestinal perfusion from the 30th to the 46th day, the blood urea was maintained at a level of about 200 mg. per 100 ml. Over a period of 16 days (with one day's rest), 134 gm. of urea was removed, or an average of 8.6 gm. a day during 8 to 10 hours of perfusion.

Creatinine and Uric Acid.—The amount of creatinine removed was about 6.8% of that of urea, and the amount of uric acid, 4.8%. As the concentrations of these substances in the blood plasma amounted to 7% of the concentration of blood urea, we may assume that they were eliminated probably almost as well as was the urea. The creatinine and uric acid in the blood did not show any increase during the 40 days of observation.

Water and Sodium Chloride.—Our observations with the dog, on which a comparatively short ileac loop was used, led us to select for this patient a perfusion fluid that proved unsatisfactory, probably because the loop

Composition of Rinsing Fluid for Intestinal Dialysis and Absorption or Excretion of Water and Chloride

Days After Nephrectomy	Composition of Rinsing Fluid, Mg./100 Ml.							Osmotic Pressure Calculated in Milliosmols per L.	Fluid Absorbed or Excreted, Ml.*	Chloride Absorbed or Excreted, Gm.*	Urea Excreted, Gm.	Flow, Ml./Hr.
	$NaHCO_3$	KCl	$CaCl_2$	NaCl	Sucrose	Dextrose	$MgSO_4 \cdot 7H_2O$					
29	0	40	28	500	6,000	0	1,230	±500	150 E	3 A	5	600
30	200	40	28	360	6,000	0	1,230	464	1,400 A	9 A	9	500
31	200	40	28	360	6,000	0	1,230	464	800 A	13 A	10	750
32	0	40	28	360	6,000	0	1,230	416	2,300 A	16 A	9	950
33	0	0	28	...	0	6,000	1,230	564	3,700 A	6 A	9	950
34	0	0	28	360	6,000	3,600	2,460	526	1,400 E	10 A	10	1,200
35	0	0	0	360	6,000	3,600	0	498	700 E	9 A	8	1,300
36	200	0	0	360	6,000	3,600	0	546	1,050 E	6 A	8	1,300
38	0	0	28	0	6,000	3,600	2,000	545	3,400 E	9 E	13	1,300
39	66	0	28	0	6,000	3,600	1,000	480	1,800 E	6 E	11	1,400
40	66	0	28	0	6,000	3,600	1,000	480	1,260 E	7 E	9	1,300
41	66	0	28	0	6,000	3,600	1,000	480	800 E	8 E	12	1,400
42	66	0	28	70	6,000	3,600	1,000	503	800 E	4 E	8	1,400
43	100	10	28	50	6,000	3,600	2,000	589	1,300 E	7 E	5	2,100
44	100	10	28	50	6,000	3,600	2,000	589	2,000 E	4 E	2	1,600
45	100	10	28	50	6,000	3,600	2,000	589	1,900 E	4 E	5	1,500

*A indicates absorption; E, excretion.

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was much longer. During the four days of perfusion (30th to 34th days inclusive), a total of 8 L. of water was absorbed during the dialysis (table). Further absorption of water was prevented by increasing the osmotic pressure of the rinsing fluid by the addition of sucrose, dextrose or magnesium sulfate. Water was now withdrawn, while sodium chloride was still absorbed (10, 9 and 6 gm. a day). The plasma chloride rose to a normal value, and, as vomiting stopped and the patient was allowed to drink, edema appeared. During this first period of eight days, a total of 72 gm. of sodium chloride had been absorbed. We then decided to remove both the edema and the excess of salt by perfusion. This was accomplished by maintaining the osmotic concentration of the rinsing fluid at its former level while at the same time decreasing its content of sodium chloride first to 0 and then to 50 mg. per 100 ml.; potassium chloride, calcium chloride and sodium bicarbonate were not changed. From the 34th to the 45th day, 16 L. of fluid were eliminated. This demonstrates that it was possible to obtain a "diuresis" of 1.5 L. a day through this intestinal loop. From the 38th to the 45th day, 48 gm. of sodium chloride was excreted by the intestinal loop, an average of 6 gm. per day.

Arterial Pressure.—During the period of positive chloride balance, the blood pressure rose to hypertensive levels (chart 2). With withdrawal of sodium chloride through the loop, the pressure fell slowly to normal and then to hypotensive levels. This patient was virtually bilaterally nephrectomized, so that it is possible that his "sodium-responsive" hypertension was not of renal origin. The apparent sensitivity of the nephrectomized subject to the pressor effects of excess sodium may account for the hypertension observed in nephrectomized dogs submitted to blood dialysis against a sodium-rich medium.[10]

Potassium.—Since the patient had a high serum potassium (33 mg. per 100 ml.), no potassium was added to the rinsing fluid at first and from 0.8 to 2.4 gm. of potassium was removed a day. The serum potassium dropped to 17 mg.

Sodium Bicarbonate.—Sodium bicarbonate usually was absorbed from the rinsing fluid. It was possible to keep the carbon dioxide-combining power at a normal level by using sodium bicarbonate from 200 to 66 mg. per 100 ml.

Calcium.—Calcium was nearly always added to rinsing fluid (calcium chloride, 28 mg. per 100 ml.). This prevented both significant absorption and loss of calcium.

Sugar.—Dextrose is a substance that is rapidly absorbed, whereas sucrose is absorbed only after enzymatic hydrolysis. Consequently, sucrose or a mixture of sucrose and dextrose was added to the fluid. Nevertheless, 300 to 400 gm. of dextrose was often absorbed. Consequently one day's perfusion provided 1,200 to 1,600 calories plus a small volume of water of oxydation.

Local Effect.—We never saw any irritation of the skin even after prolonged contact with the dialyzing fluid. The local effect was limited to irritation of the mucosa of the loop when a strongly hypertonic fluid was used. Care should be taken to avoid decubitus of the stomata by inflow or outflow tubes. It is well to bear in mind that de Peyster and Straus[11] produced multiple mucosal ulcerations with continuous perfusion of an ileal loop in dogs, using 20% sucrose-Tyrode solution. We have not used such high concentrations and have avoided continuous dialysis over a period longer than 70 hours.

As a result of our experience in this case, we suggest the following general formula for the rinsing fluid in an isolated intestinal loop:

Glucose	0-3.6%
Sucrose	6-8%
Sodium chloride	0-150 mg./100 ml.
Potassium chloride	0-40 mg./100 ml.
Calcium chloride	0-28 mg./100 ml.
Sodium bicarbonate	100-200 mg./100 ml.

This formula can be modified according to the special features of the patient to be treated. Sucrose can be partially replaced by $MgSO_4.7H_2O$, 2 per cent. The use of carbomethylcellulose is being studied at present.

SUMMARY

A man 36 years old was hospitalized for 46 days after removal of his only functioning kidney. He was kept in urea balance by dialysis through an isolated intestinal loop for 16 consecutive days. In this patient the blood pressure varied in proportion to the sodium chloride and water balance. Salt and water balance could be maintained by appropriate adjustment of the composition of the rinsing fluid. The rinsing fluid should usually be hypertonic and should not contain more than 150 mg. sodium chloride per 100 ml. As a result of study of this patient, a more useful rinsing fluid has been developed.

Groenezoom 242, Rotterdam (Dr. Twiss).

10. Grollman, A.; Muirhead, E. E., and Vanatta, J.: Role of Kidney in Pathogenesis of Hypertension as Determined by Study of Effects of Bilateral Nephrectomy and Other Experimental Procedures on Blood Pressure of Dog, Am. J. Physiol. **157**: 21 (April) 1949.

11. de Peyster, F. A., and Straus, F. H.: Use of Hypertonic Solutions for Enteric Perfusion, J. Lab. & Clin. Med. **34**: 944 (July) 1949.

Discarded Theories and Treatments.—It is salutary to look back in Medicine. Its path is strewn with discarded theories and treatments which held the field for short and credulous periods; and when some are thrown up again by the whirligig of time, a knowledge of the part which they have played in the evolution of our ideas is always helpful. It is often chastening. When orthodox medicine fails, unorthodox methods appear; and that is easy enough to understand. What we often do not recognise is the frequency with which ill-founded theories become accepted by the orthodox, and how ideas of slender foundation may dominate for a time a whole branch of medicine. The fact that ideas or treatments have been discarded does not mean that they were ill founded or completely without results. They may have been followed by better ideas or treatments. Sometimes they are unjustly displaced, and in the process much that was good becomes forgotten.—C. Cameron, M.D., Fads and Fancies: Thirty Years of Tuberculosis, *Lancet*, April 14, 1951.

SPECIAL ARTICLE

CITIZENSHIP—A PHYSICIAN'S OBLIGATION

Ernest E. Irons, M.D., Chicago

American freedom or socialistic enslavement—which shall it be? A decade or so ago, most citizens would have been shocked that any sane person should dare to ask such a question. Liberty and opportunity were the substance of our social, political, and economic tradition. True, the increasing complexities of urban life with its rising standards of living and the impact of world troubles constantly imposed new problems to be solved and new social injustices to be corrected, but, despite these difficulties, we continued to enjoy our American freedom and assumed that our birthright could never be taken away.

The vast and increasing confusion in which the American people now are groping would have been inconceivable to the average intelligent citizen thirty years ago. We had made mistakes, but our former national common sense saved us from catastrophic accidents. Our departure from sound economics and honesty can be explained only by a growing disregard for moral values in business, in labor, in politics, and in our relations with our fellow men. Never before has public confidence in our administrative political leaders fallen to so low an ebb as now.

After years of at times deceitful planning, the promoters of the Socialist Welfare State decided that the public and some members of Congress were sufficiently misinformed and confused to ensure the enactment into law of the nationalization of medicine. This attempt to take a long step down the Socialist road to communism failed, but only because patriotic democratic members of Congress broke with a misguided federal administration and refused to accede to this socialistic regimentation of their countrymen. Socialization of medicine was again made an issue in the congressional elections of 1950, but by this time many of the misstatements of socialistic bureaucrats had been exposed by a vigorous campaign of education. As a result, sound thinking triumphed over personal political expediency.

SOCIALISTIC DEGENERATION IN MEDICINE AND GOVERNMENT

The education of the American people in matters medical is now well begun. Apparently the election of Nov. 7, 1950, made clear the opinion of the voters on the issue of socialized medicine. The more they learned about it and observed its working in England, the less they wanted it. Physicians themselves became more aware of what medicine in a free economy had accomplished and of how political medicine would impair the quality of medical service to their patients, the public. The assumption by government of the supervision of the health and private lives of citizens is an early and, in the past, successful Marxian technique in the socialization of the state.

Socialized medicine was only one of the issues in this campaign, but it was one which the voters when fully informed could understand. Health and liberty of choice are closer to men's hearts and lives than the more abstract but equally important issue of the impact of socialism on government. The roots of socialism in this country have spread far beyond medicine, deep into many phases of our national life.

Physicians had been expected to attend principally to their profession, and this they traditionally, and perhaps unfortunately, had done. In self-defense and in the interest of the welfare of the public they were now suddenly propelled into medicosocial problems with which they should have been more conversant, and then into the midst of political combat in which they were inexperienced. They saw ruin of medical care of their patients, as well as national financial disaster through reckless spending, advancing on the professions and on business institutions. They saw the progressive loss of freedom in a nation dedicated to free enterprise and individual responsibility and incentive. They began to stir and to awaken colleagues and neighbors to their personal responsibility as American citizens. In many communities they, as citizens, took a leading part in elections; in some, their efforts determined the outcome; in others, the medical contribution was a minor but, nevertheless, a significant factor in determining the result of this first battle. The election of Nov. 7 proved that citizens could be aroused by a realization of the increasing regimentation of the nation.

Now, as a citizen, the physician must look about him and try to determine what has happened to him and his fellow citizens that freedom of the individual should thus be threatened. He knows that he is not an economist, nor a statesman, nor a financier, nor a philosopher. But he is deeply interested in human welfare and in both the medical and economic care of the unfortunate. At the same time, he recognizes the danger of moral pauperization in the attempt to relieve physical poverty. He is aware of the conflict between superficially attractive Utopian proposals to "furnish free medical care" to everyone, and the inevitable violation of personal liberty and deterioration of quality of service which will result from their implementation. His medical training has taught him to look behind the symptoms of a disease for the causes which have produced it. He may be unable to determine all the causative factors, but, in any case, he can find some of them and, by their correction, prevent further damage and happily contribute to the recovery of his patient.

THE ILLNESS OF GOVERNMENT

Let us look at the government of our country as a patient. Clearly it is not in good health. What has the patient done to impair his health? What habits has he acquired that have contributed to his present illness? What changes have occurred in his environment, per-

Read at the Annual Meeting of the Illinois State Medical Society, Chicago, May 23, 1951.

haps, in part, through no fault of his own, that have weakened him? How serious is his sickness? Can he recover? Some of these questions the physician may well refer to his consultants, the statesman and economist. Evidently our national ill health is due to many causes besides the medical. However, some of the early departures from sound thinking involve sociomedical questions, and so it may not be amiss for a physician to recall some of those now forgotten events. Some of the later ones are neither creditable nor palatable. The average man has an extremely limited knowledge of history and a deplorably short memory. One of the chief assets of the demagogue is the proneness of people to believe what they are now told and to forget what really happened a few years before. Our return along the hard road back to sanity and safety may be assisted by a look backward at early and at first unrecognized deviations from right and justice.

ECONOMIC AND SOCIAL CHANGE

Our relations with each other in families, neighborhoods, cities, and in the nation are continually subject to change. With economic changes, population shifts and occupations change. Invention, machinery, and the division of labor have increased the density of population in cities and have created new problems for workers and employers. The cities themselves are undergoing continuous change in the character of their several districts.

But in the effort to remedy old or new defects in our civilization, we must explore carefully the ultimate effects of new social remedies. Such caution is not reactionary; rather, it ensures real progress. Social crises are created when changes in economics are sudden and so widespread that masses of people are unable to adjust themselves to them. At such times, new theories of procedure are suggested, some of which are good; others are bad because the means employed for attempted correction may yield temporary benefits, but later create new distress. Alluring bait is offered in large print; heavy penalties are concealed in small type.

Our nation has survived many political and economic crises since the Civil War. The Greenback era, free coinage of silver, Populism, and the unrest typified by Coxey's Army appeared from time to time as national problems. Each originated in a time of economic stress in a misguided attempt to accomplish a needed reform. Each appealed to an emotionally excited bloc whose leaders were perhaps uninformed of the total effect of their proposals, or else they ignored the national interest to secure personal advantage. Each of these issues was resolved on the basis of national common sense.

In America we withstood the wreckage of postwar inflation which paralyzed some of the nations of Europe. However, we embarked on a program of speculation. Money was mistaken for wealth. Unsound and dishonest procedures crept into business, and as a nation we worshiped Mammon. Substantial business men, enchanted by the vision of easy money, lost their economic poise. Our social values were impaired still more than our economic standards.

The answer came in the financial crash of 1929. This financial disaster was part of a world-wide financial collapse, which in some countries preceded, and in a few, followed, our own. Fortunes of the rich were swept away along with the savings of the thrifty wage earner. Discouragement and frustration pervaded all walks of life. People demanded a change, not caring greatly what its nature might be.

POLITICAL IMMORALITY

At this point our elected governmental officials failed us. They campaigned for economy and yet, when elected, they introduced excessive waste. They sacrified honest action to political advantage. They employed measures which appeared to provide temporary help to the poor and financially distressed man, but at the same time they took away from him his initiative and sense of responsibility to help himself. Many citizens have not even yet recovered their sense of economic and personal responsibility.

To loss of popular respect for law was added loss of governmental respect for the Constitution. When the Supreme Court withheld approval of some New Deal proposals, it was attacked by the administration and the attempt was made to replace its members by those more complacent with the new philosophy. Administrative regulations were devised to circumvent constitutional law. The democracy of our republic, based on the concept of the freedom, dignity, and personal responsibility of the individual citizen, was disregarded.

In 1934 a Cabinet officer stated, "A wonderful opportunity lies ahead of us under our national leadership, not only to consolidate all the social gains to date but to make further substantial advances. . . . It is necessary to modify or even to discard certain social, economic and political concepts appropriate to a pioneer people . . ." In 1945 spokesmen for the Federal Security Administration revealed their program in balder terms, stating that "Social security and public assistance programs are a basic essential for attainment of the socialized state . . ." This statement was reprinted in 1949 and recently again distributed. Distribution is reported to have been discontinued in 1951, only after repeated criticism by the medical profession.

That we have survived thus far is a tribute to the original sturdiness of the nation.

In such an atmosphere, and with such contempt for the principles that our fathers expressed in the Constitution and that we had lived by for 120 years, it is small wonder that economic standards and morality in government and in the lives of the ordinary citizen declined still further. Rigid honesty was replaced by willingness to compromise, and the nation, having lost its guiding compass in domestic matters and, later, in international dealings, was prepared to travel further down the Socialist road.

World War II found us better served technologically than in World War I. We carried on the war successfully, but, because of our moral deterioration, we failed to win the peace. Socialism and communism had infiltrated government departments, and traitors sat in high places. Public confidence in the integrity of government departments was shaken.

SOCIALISTS AND INTELLECTUALS

The significance of intrusions of government into the private lives of citizens by regimentation of a formerly free economy and by a subtle imposition of a planned

economy through subsidies is not even now understood by the people. They feel that things are not right, but do not always understand why. Following the well-known pattern of Marxism, Socialist propagandists gathered about them a company of people, some of whom had acquired prominence in their own fields of science or letters but had little real knowledge of the fundamentals of economics or government. To this group, often called the intellectuals, was added a miscellaneous fringe of flabby-minded joiners. Socialism acquired its fellow thinkers as communism had its fellow travellers.

Full-fledged Socialists formed the directing core of the intellectuals and set about molding the opinion of the masses, who were themselves unable to form intelligent judgments. A large proportion of the fellow-thinking intellectuals were equally unqualified to form sound opinions. It sufficed to them to believe that their views were their own, rather than those implanted by their Socialist leaders. They became "second hand dealers in ideas."

"Intellectuals" is a convenient term to describe this coterie, but it should convey no personal connotation of opprobrium other than that many allow themselves to be made the unknowing tools of propaganda to divert public opinion from support of constitutional government. Some, no doubt, derive satisfaction in basking in a fleeting and undiscriminating public acclaim of their pronouncements, the soundness of which is not supported by actual knowledge. While they profess to be liberal they are actually being gullible. They do not intend to be unpatriotic, but their actions appear to belie their plea of patriotism.

EDUCATION OF AMERICAN CITIZENS

The education of our citizenry to the dangers of socialism has already begun and must be continued. Through this education, we, as physicians, may also learn. This is our most important national issue, in which all elements of our national life—manufacturing, banking, business, labor, agriculture, together with medicine and the other professions—are vitally concerned. The very existence of our two-party system, in which we believe, is at stake. We have a right to be proud of our country, its resources, its freedom of the individual, and its Constitution which guarantees this freedom. Our American Constitution is unique and provides opportunity, justice, and freedom to each citizen in a free enterprise system. It was intended to be unique, and, under it, freedom need not "perish from the earth."

We are proud to be citizens under this system. It may have some faults, but under it we enjoy the highest standard of living yet attained in the world. And for this we offer no apology.

We need not cringe at the Communist pronouncement that capitalism and communism cannot coexist in the world. If this be true, then it will not be capitalism and personal freedom that go down. Communism and socialism have within them the elements of revolution and violence which, as in the past, will effect their own downfall.

Some patriotic and relatively well-informed citizens now seem to doubt whether we can ever escape from the domination of bureaucracies which we have allowed to grow up in our government, or, indeed, can long withstand the pressures of our socialistic and communistic enemies. Such faint hearts need only recall the period 1840-1860, when other good people doubted the possibility of abolishing physical human slavery and preserving the Union.

Bureaucratic and socialistic enslavement of the individual can and will be overcome just as surely, but only by a return to fundamental moral and economic principles. Then we shall have more national self respect; more general respect for our Constitution and for the freedom which it provides. Then we can more effectively oppose the evil forces of socialism in its several forms, whose false prophets have brought nations, small and large, to this present critical pass. Then can we successfully assist the forces of humanity and righteousness throughout the nations of the world to relieve misery and to regain their own self-respect and their respect for the dignity and liberty of their individual citizens.

122 S. Michigan Ave.

CLINICAL NOTES

ELECTROSTIMULATION IN RESPIRATORY EMERGENCY

REPORT OF A CASE

Guy Zimmerman Jr., M.D., Warren, Pa.

W. H., a 45 year old white housewife, was admitted for the second time to Warren State Hospital from a city 65 miles distant on June 26, 1950, at 3:45 p. m. On arrival at the hospital she was in a semistuporous state and could not give an intelligible response. The ambulance driver accompanying her likewise was unable to provide any specific information, except that during the trip she seemed to rest quietly and he had heard she had spent the previous night in jail. Data obtained from the patient's previous admission revealed that she was considered neurotic and that she had been alcoholic for 12 years. The first admission was precipitated by a bromide psychosis.

Physical examination revealed a poorly nourished, semiconscious, dehydrated female, who uttered incomprehensible phrases and responded to painful stimuli. Her respiratory rate was 25, temperature 99.6 F. (rectal), pulse rate 80 and blood pressure 110/70. There were numerous abrasions and contusions about the thighs, face and back. Loud rhonchi were heard over both lung bases posteriorly. Heart sounds were good. Neurological examination revealed no cranial nerve involvement. There was no evidence of head injury. Deep reflexes were depressed, but there were no pathological reflexes. Pupillary response was normal. Ophthalmoscopic examination disclosed no abnormalities. The urine was normal except for the albumin content (1+); red blood cells numbered 3,690,000 and white blood cells 10,350. The hemoglobin level was 10 Gm. (60 per cent). The differential count showed 88 per cent polymorphonuclear cells and 12 per cent lymphocytes; blood urea nitrogen was 4.4 mg., blood alcohol 48 mg. and blood bromide 500 mg. per 100 cc.

Continuous intravenous infusions of isotonic sodium chloride solution were started; the patient was given 7½ grains (0.50 Gm.) of caffeine sodium benzoate every four hours and 600,000 units of penicillin every six hours. Her general condition did not seem critical. The following morning, 16 hours after admission, her condition suddenly became worse. The temperature rose to 102

Resident physician, Warren State Hospital, Warren, Pa.

F. (rectal); the pulse became weak, with a rate of 120, and respirations extremely shallow, with a rate of 55. Mottled cyanosis appeared on the face and both upper and lower extremities. There was pronounced respiratory impairment. In the course of one hour she became progressively worse, and death appeared near.

In this situation, a low modulation, alternating electric current varying from 3 to 12 milliamperes was directed through the diencephalic area of the brain, for stimulation of the respiratory center. Dramatic improvement was almost immediately noted. Respirations became deep at 14 per minute. The current was applied for two and one-half minutes. Cyanosis disappeared; deep reflexes returned to normal. During the next 48 hours this procedure was repeated whenever the exigency of the situation demanded, a total of five treatments being administered. After the fifth treatment no further stimulation was needed. Subsequently a typical drug psychosis developed (visual hallucinations, disorientation, fearfulness). Twelve days after admission, the patient was out of bed, rational and completely recovered from her acute episode.

TECHNIQUE

In the above case a low modulation, 3 to 12 milliampere current was directed through the diencephalic area of the brain. The current was delivered by a Reiter electrostimulator (model CW-47). Handle type button electrodes, moistened with isotonic sodium chloride solution, were applied 1 inch (2.5 cm.) directly cephalad to the apex of each ear. The current was initiated at 12 milliamperes and the intensity gradually lowered until a maximum depth of respiratory excursion was obtained. In each treatment session the current was applied for two and one-half minutes, with alternatingly increasing and decreasing intensity during the treatment interval. The instant of greatest stimulating effect seemed to occur at a current varying from 8 to 12 milliamperes, but deep respiratory excursion developed only when the current intensity was decreased to 3 to 5 milliamperes. In other words, a combination of alternating low and high current intensity seemed to produce the optimum effect on respiration. No convulsions resulted from this technique. Two operators are necessary, one to apply and support the electrodes and one to manipulate the controls. It is advisable that additional attendants be present to keep the patient in proper alinement.

COMMENT

Hirschfeld [1] and others have pointed out that modifications of the above electrostimulating technique are useful in the treatment of certain types of schizophrenia and have shown promise in relieving anxiety. An interesting side light evolved from Hirschfeld's work, in that, by modifying his original technique, he achieved a specific antidote for counteracting respiratory depression of barbiturate intoxication.

In the case herein described, after the acute emergency had passed and when historical information became available, it was learned that this patient had consumed an undetermined but large quantity of triple bromides, plus a relatively smaller amount of barbiturates. Also, eight hours after the acute condition, x-ray of the chest confirmed clinical evidence of a beginning pneumonic process in the lower lobe of the right lung. Thus in this case my co-workers and I were confronted with respiratory depression due to drugs (bromides and barbiturates) on which was superimposed an acute infectious process. Although the specific manner in which electrostimulation affects the respiratory center is by no means clear, it was rapidly effective in relieving a dire emergency caused by a combination of factors.

1. Hirschfeld, G.: Observations with Nonconvulsive Electrostimulation, read at the American Psychiatric Association, Detroit, May 1-5, 1950.

ROENTGENOLOGIC APPARATUS ATTACHABLE TO THE BELL FRACTURE TABLE

Ray K. Runge,
B. R. Kirklin, M.D.
and
Ralph K. Ghormley, M.D., Rochester, Minn.

Roentgenographic examination of fractures in the operating room with roentgenologic apparatus separate from the fracture table, a method commonly employed, has usually been attended with more or less inconvenience, inaccuracy in duplicating angles of view in a series of roentgenograms, and, if open operation is being performed, hazard of breaking asepsis.

Heretofore, for example, at the Mayo Clinic, a patient having a fracture of the neck or upper portion of the femur was placed on a fracture table with his legs extended and abducted and his feet secured to the foot rests. Then a mobile roentgenographic unit, consisting of a transformer, control stand, and tube stand with tube, was wheeled up to that side of the table corresponding to the injured hip. The tube was centered vertically over the region of the fracture, a loaded cassette was slipped into a tunnel under the hip and a roentgenogram, giving an anteroposterior view, was made. Then the unit was removed to make room for the surgeon.

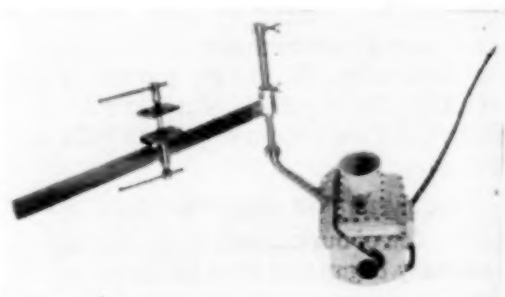

Fig. 1.—Unit 1, with angled post, bar, and clamp, detached from the table.

A second unit, identical with the first, was brought up to the foot of the table. The tube was placed between the patient's outstretched legs near the sound one and directed toward the region of the fracture so as to obtain a lateral view of the break, the cassette being held by an assistant against the patient's hip in a plane perpendicular to the axis of the rays.

Since another series of roentgenograms would be required at the end of the operation, and, perhaps, others

Helpful suggestions were received from all the consultants in the Section on Orthopedic Surgery during the development of this apparatus.
Technical Assistant (Mr. Runge); from the Section on Roentgenology (Dr. Kirklin) and the Section on Orthopedic Surgery (Dr. Ghormley), Mayo Clinic.

during its course, the second unit was left in place in the hope that the surgeon would not be obliged to move it or the table; additional roentgenograms should be made at the same angle as the first to assure valid comparisons. But often that hope was not realized; the table or tube was displaced, and the unit had to be reset, seldom in

Fig. 2.—Unit 2, with angled post, bar, and clamp, detached from the table.

exactly the same place or in the same relation to the fracture. If replacement had to be done under a sterile sheet, it was difficult. The inevitable resetting of the first unit, the one used for the anteroposterior view, presented the same difficulties, and, when done during operation, risked contamination of the surgical field. Both units were heavy and occupied considerable floor space, so that they were hard to move about, and, wherever they were placed, they seemed to be in the way.

To obviate or, at least, to diminish these disadvantages and to facilitate the work, we have devised two tube assemblies that can be attached to the Bell table. New unit 1 consists of a standard transformer and small

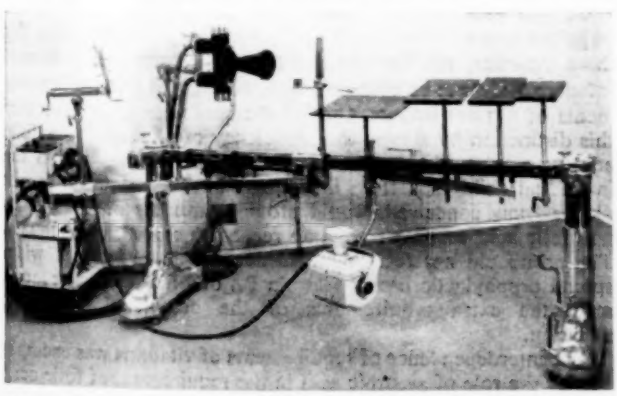

Fig. 3.—Bell table with both units attached to the table and connected with the mobile control-transformer stand.

tube head compactly assembled (Fig. 1). It is suspended from the Bell table by an obliquely angled steel post, which is inserted into an eye in a relatively long arm, which, in turn, is inserted horizontally into a slot at the lower end of a bolt that holds together the halves of a steel clamp; this clamp rides between the two bars that constitute the central beam of the table. The clamp can be removed and placed elsewhere in the beam as desired. All connections are adjustable and can be locked by wing nuts or levers. This adjustability, together with the angulation of the supporting post, permits setting the unit at any position within a wide range. From the unit, a long, flexible cable, which carries primary current only, extends to a control-stand that operates both unit 1 and unit 2. As the new unit 1 is set immediately below the field of operation, it usually becomes soiled, so it is covered with plastic material that can be cleaned easily.

Application of the new unit 1 differs from that of the old in that the new one is used to obtain a posteroanterior view of the fracture instead of the reverse. Accordingly, in the instance of a broken hip, the unit is set directly beneath the site of fracture, at the usual distance of 36 in. (91 cm.) from the cassette, which is laid on the patient's thigh, sterile towels or bags being used for protection as needed.

The new unit 2 consists of a small shockproof tube head with slightly modified cable connections (Fig. 2). Like unit 1, it is mounted on an obtusely angled post, and its connections with the table are the same as those of unit 1 except that the horizontal bar into which the

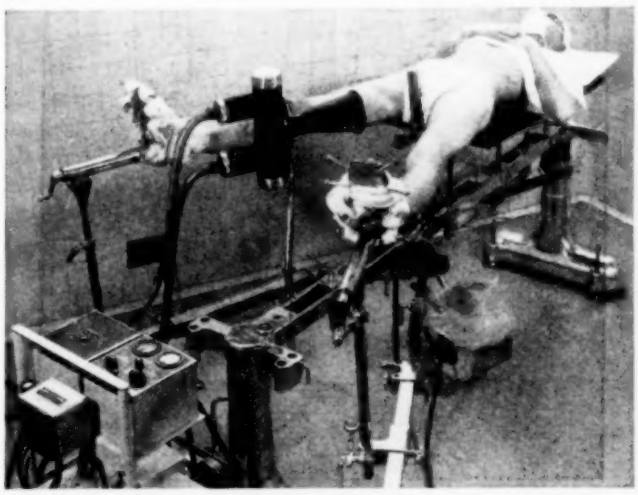

Fig. 4.—Apparatus attached to the Bell table; the patient is in position for posteroanterior and lateral roentgenography of the upper end of the femur.

post is inserted is short. All connections can be adjusted to suit, and locked. The tube is connected with the mobile control-transformer stand by long flexible cables that carry high-tension current only. With its many adjustable mountings, this unit, like its fellow, can be set in almost any position desired (Fig. 3).

In cases of fracture of the neck of the femur, for instance, unit 2 is set as close as possible to the internal aspect of the patient's sound leg, the small size of the new tube head giving it an advantage in this respect over the old (Fig. 4). The cone is directed toward the fracture for a lateral view, the cassette being held by an assistant against the hip and transversely to the axis of the rays at a target-film distance of 36 in. (91 cm.). The tube is left in place during the operation. It is so small that the surgeon is not likely to come into accidental contact with it or ask for its removal. If it does become necessary to remove the unit, the post can be inserted temporarily into one of the tubular front legs of the control stand.

Later, if further lateral views are required, the tube can be restored to its original position, and the angle of roentgenography will duplicate or closely approximate the original angle, because the patient, table, and roentgenologic unit will be in the same relation as before.

This assurance that successive views, both posteroanterior and lateral, will be made at or very near the same angle as the original, regardless of temporary changes of position, thus making comparisons reliable, is perhaps the most outstanding advantage of the new installation over the old. But there are other advantages, some of which have been mentioned in passing. Repetition of the posteroanterior view does not threaten contamination of the surgical field. The small size of unit 2 makes positioning for the lateral view easier and better. Both units, when set, are out of the way and are not likely to be pushed out of focus during operation. Since the units are attached to the table, the latter can be moved without disturbing relations. The units are much lighter

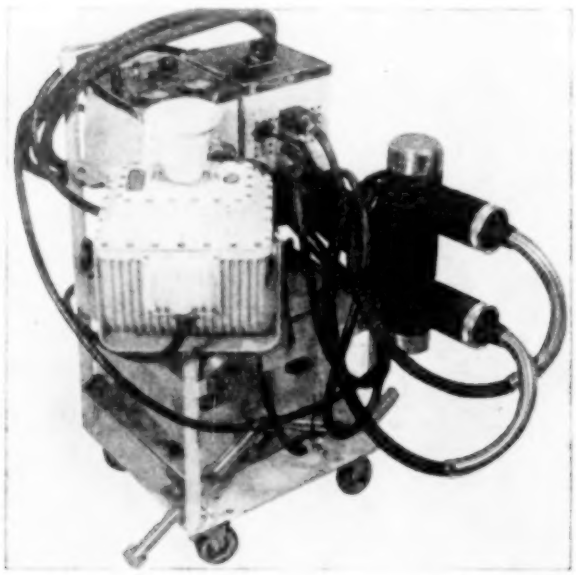

Fig. 5.—Both units mounted on the mobile control-transformer stand for storage.

than the old and can be removed, replaced, or shifted about with ease. When not in use, the control-transformer stand, with the posts of both tube units inserted into its tubular posts, occupies a floor space of only 15 in. by 16 in. (38 cm. by 40.6 cm.) so that the entire apparatus can be parked without taking up an undue amount of room (Fig. 5). The cost of the new units is comparable to that of the old.

Advances in Preventive Medicine.—During World War II, military preventive medicine reached a high state of development. This great conflict was the first one in history that was not followed by major epidemic diseases. In the Army alone, more than 10,000,000 men were mobilized to serve in some of the most unhealthful regions of the world, but their health was so well protected that the disease rates were lower than in any of our former wars. There were no serious epidemics, and the disease death rate was only 0.6 per thousand per year. This figure is low compared with the rate of almost 16 per thousand during World War I, and the still higher rate of 25 per thousand during the Spanish-American War.—James Stevens Simmons, M.D., *New England Journal of Medicine*, May 10, 1951.

COUNCIL ON FOODS AND NUTRITION

REPORT TO THE COUNCIL

The Council has authorized publication of the following report prepared by William B. Castle, C. A. Elvehjem, Charles D. May, Arnold D. Welch, Wolf W. Zuelzer, and Allan M. Butler. These men participated in the first of a series of conferences among active investigators on problems of infant nutrition held at the Massachusetts General Hospital on Nov. 16, 1950. Among the topics considered were (1) fundamental actions of vitamin B_{12} and folic acid, (2) distribution of these vitamins in foods, (3) the clinical evidence of deficiencies, and (4) the interrelations of vitamin B_{12}, folic acid, citrovorum factor, and ascorbic acid.

JAMES R. WILSON, M.D., *Secretary.*

VITAMIN B_{12} AND FOLIC ACID IN INFANT NUTRITION

Perhaps the most important practical result of the deliberations of this conference was the emergence of a tentative attitude regarding the adequacy of vitamin B_{12} and folic acid in the milk diets customarily fed the growing infant from birth. Evidence was presented indicating that, after lactation is fully established, woman's milk contains between 0.1 and 1.0 microgram of vitamin B_{12} and folic acid per liter.[1] Cow's milk was reported to contain slightly more folic acid and definitely more vitamin B_{12} than human milk. Although there is some natural variation between samples, the conferees agreed that infants being fed artificially with cow's milk formulas would receive as much vitamin B_{12} and folic acid as the breast-fed infant, because these formulas usually contain 50 to 70% cow's milk. Thus, there would not seem to be any urgent need to supplement, with vitamin B_{12} or folic acid, the diet of normal infants being fed cow's milk.

The group attending this conference did not believe there was evidence of widespread deficiency of vitamin B_{12} and folic acid among infants and children as revealed by megaloblastic anemia or suboptimal growth. A cautious attitude was assumed toward employment of vitamin B_{12} or folic acid in an attempt to augment the normal growth of healthy infants being fed either artificially or by a well-nourished mother. Any studies claiming improved growth in normal children from supplementary vitamin B_{12} or folic acid will have to be appraised critically.

Certain pathologic conditions leading to reduced intake or impaired assimilation in infants might increase the need for these vitamins, but the therapeutic requirements of abnormal infants should not be confused with, or extended to, the requirements of normal infants. One of the conferees aptly expressed this distinction by stating that deficiency of vitamin B_{12} or folic acid was more likely to result from abnormalities within the individual child than from inadequate intake, because a proper diet, as now conceived, would provide amounts of vitamin B_{12} and folic acid which we have no reason to consider inadequate. The group did not feel that evidence presented justified widespread prophylactic use of vitamin B_{12} or folic acid in order to meet the extra requirements of the occasional pathologic situation.

The interdependence of requirements of vitamins was exemplified by the role of ascorbic acid in the requirement of folic acid. When adequate ascorbic acid is available, the normal infant's need for folic acid appears to be satisfied by the small amounts normally present in milk. If there is a deficiency of ascorbic acid, the amount of folic acid required to prevent megaloblastic anemia is considerably increased.

Carefully controlled studies of growth as well as the incidence of megaloblastosis would be helpful in detection of the circumstances that may lead to a deficiency of vitamin B_{12} or folic acid. Other indexes are also needed. Further studies of the role of the intestinal flora in the requirements, provision, and metab-

1. The mean figure used was 0.41 microgram for vitamin B_{12} and 0.71 microgram for folic acid.

olism of vitamin B_{12} and folic acid would be beneficial. The role of gastric factor in the absorption of vitamin B_{12} in infancy must be determined before the adequacy of the intake of vitamin B_{12} can be evaluated from the content of the diet alone. The discussion of the fundamental metabolism of vitamin B_{12} and folic acid indicates that a final attitude toward the requirements of these vitamins in the diet will have to await a more complete understanding of their relationship. Folic acid appears to serve as a precursor of a biologically more active form (citrovorum factor or folinic acid). Ascorbic acid enhances the production of this factor from folic acid. The evidence does not indicate that vitamin B_{12} is critically involved in the conversion of folic acid to citrovorum factor, but it could be concerned with the subsequent formation, from this factor, of another metabolically significant compound.

A valid reason probably will be found for the natural provision of these potent vitamins in small amounts and in the ratio in which they occur in milks. Then we may be rewarded for a conservative approach and the avoidance of promiscuous use of these vitamins which play such a vital role in basic cellular growth and metabolism.

ACCEPTED FOODS

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Armour and Company, Chicago, Distributed by Gerber Products Company, Fremont, Mich.

GERBER-ARMOUR STRAINED BEEF HEARTS is made from meats (trimmed of fat, sinews and connective sheaths) with added salt, prepared under inspection of the Meat Inspection Division of the United States Department of Agriculture.

Analysis (submitted by manufacturer).—Total solids 18.7%, moisture 81.3%, ash 1.2%, fat 4.0%, protein (N × 6.25) 14.0%, carbohydrates (none).

Vitamins and Minerals	Mg./100 Gm.
Thiamine	0.041
Riboflavin	0.710
Nicotinic acid	4.35
Calcium	6.0
Phosphorus	121
Iron	3.0

Calories.—0.92 per gram; 26.1 per ounce.

Use.—For use in the feeding of infants, convalescents and others requiring a soft diet.

GERBER-ARMOUR STRAINED PORK is made from meats (trimmed of fat, sinews and connective sheaths) with added salt, prepared under inspection of the Meat Inspection Division of the United States Department of Agriculture.

Analysis (submitted by manufacturer).—Total solids 21.3%, moisture 78.7%, ash 1.1%, fat 5.1%, protein (N × 6.25) 14.6%, carbohydrates (none).

Vitamins and Minerals	Mg./100 Gm.
Thiamine	0.23
Riboflavin	0.21
Nicotinic acid	3.0
Calcium	8.0
Phosphorus	116
Iron	1.0

Calories.—1.04 per gram; 29.5 per ounce.

Use.—For use in the feeding of infants, convalescents and others requiring a soft diet.

The Borden Company, New York.

BIOLAC-MODIFIED POWDERED MILK. Ingredients: Whole milk, skim milk, milk sugar, concentrates from cod liver and fish liver oils (containing natural vitamin A), vitamin D, thiamine hydrochloride U. S. P., and ferric citrate U. S. P.

Analysis (submitted by manufacturer).—Total solids 98.0%, moisture 2.0%, minerals 4.3%, fat 20.2.%, protein 20.2%, lactose 53.3%.

Vitamins and Minerals	Per 100 Gm.	
Vitamin A	1,800	U.S.P. units
Vitamin D	290	U.S.P. units
Thiamine	0.18	mg.
Riboflavin	1.4	mg.
Calcium	610	mg.
Phosphorus	500	mg.
Iron	6	mg.

Calories.—4.8 per gram; 136 per av. oz.; 39.0 level tablespoon.

Use.—For use in infant feeding.

BREMIL POWDERED INFANT FOOD. Ingredients: Skim milk, lactose, palm oil, cocoanut oil, peanut oil, lecithin, calcium chloride, methionine D-L, ferrous sulfate, ascorbic acid, nicotinic acid, thiamine hydrochloride, riboflavin, vitamin A, vitamin D and potassium hydroxide.

Analysis (submitted by manufacturer).—Total solids 97.7%, moisture 2.3%, ash (minerals) 3.9%, fat 27.5%, protein 11.7%, carbohydrate 54.6%.

Vitamins and Minerals	Per 100 Gm.	
Vitamin A	2,570	U.S.P. units
Vitamin D	643	U.S.P. units
Thiamine	0.3	mg.
Riboflavin	0.8	mg.
Nicotinic acid	4.8	mg.
Ascorbic acid	24.0	mg.
Iron	6.4	mg.

Calories.—5.1 per gram; 144.6 per ounce; 44 per level tablespoon.

Use.—For use in infant feeding.

The H. J. Heinz Company, Pittsburgh.

HEINZ JUNIOR CHICKEN SOUP. Ingredients: Dressed chickens, rice, whole milk powder, flour, carrots, 50% cream, celery, onions, dried yeast, monosodium glutamate and salt in sufficient water to prepare properly.

Analysis (submitted by manufacturer).—Total solids 11.72%, moisture 88.28%, ash 1.03%, fat (by acid hydrolysis) 2.25%, protein (N × 6.25) 1.94%, crude fiber 0.06%, carbohydrates other than crude fiber (by difference) 6.40%, total sugar as sucrose 0.70%.

Vitamins and Minerals	Mg./100 Gm.
Thiamine	0.074
Riboflavin	0.100
Nicotinic acid	0.81
Calcium	31.0
Phosphorus	23.0
Iron	0.13
Copper	0.11

Calories.—0.55 per gram; 15.2 per ounce.

Use.—For use in the feeding of older infants and young children.

HEINZ JUNIOR MACARONI, TOMATOES, BEEF AND BACON. Ingredients: Macaroni, beef chuck, flour, 50% cream, carrots, sugar, tomato solids, bacon, dried yeast, whole milk powder, celery, onions, beef extract and salt in sufficient water necessary for preparation.

Analysis (submitted by manufacturer).—Total solids 16.49%, moisture 83.51%, ash 1.50%, fat (acid hydrolysis) 2.32%, protein (N × 6.25) 2.76%, crude fiber 0.19%, carbohydrates other than crude fiber (by difference) 9.72%, total sugar as sucrose 2.61%.

Vitamins and Minerals	Per 100 Gm.	
Vitamin A activity	470	I.U.
Thiamine	0.331	mg.
Riboflavin	0.146	mg.
Ascorbic acid	1.32	mg.
Nicotinic acid	1.41	mg.
Calcium	19.0	mg.
Phosphorus	25.0	mg.
Iron	0.68	mg.
Copper	0.3	mg.

Calories.—0.71 per gram; 20 per ounce.

Use.—For use in the feeding of older infants and young children.

Mead Johnson and Company, Evansville, Ind.

PABLUM BARLEY CEREAL. Ingredients: Barley flour, powdered beef bone, sodium chloride, dried yeast and iron.

Analysis (submitted by manufacturer).—Total solids 93.0%, moisture 7.0%, ash 4.4%, fat (ether extract) 0.3%, protein (N × 6.25) 10.5% crude fiber 0.7%, carbohydrates (other than crude fiber by difference) 77.1%.

Vitamins and Minerals	Mg./100 Gm.
Thiamine	1.06
Riboflavin	0.35
Calcium	770
Phosphorus	650
Iron	30
Copper	1

Calories.—3.5 per gram; 100 per ounce.

Use.—For use in the feeding of infants and young children, and for convalescents requiring a soft diet.

PABLUM RICE CEREAL. Ingredients: Rice flour, powdered beef bone, sodium chloride, iron, thiamine hydrochloride, riboflavin and nicotinamide.

Analysis (submitted by manufacturer).—Total solids 92.0%, moisture 8.0%, ash 3.8%, fat (ether extract) 0.2%, protein (N × 6.25) 6.0%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 81.7%.

Vitamins and Minerals	Mg./100 Gm.
Thiamine	1.41
Riboflavin	1.06
Nicotinic acid	14.1
Calcium	790.0
Phosphorus	530.0
Iron	30.0
Copper	0.6

Calories.—3.5 per gram; 100 per ounce.

Use.—For use in the feeding of infants and young children, for convalescents requiring a soft diet, and for diets in allergies.

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THE BIOSYNTHESIS OF CITRIC ACID

During the past decade, citric acid, long known to be a constituent of many body tissues and fluids, has come into prominence in the medical sciences as an important member of a catalytic cycle involved in the final cellular oxidation of carbohydrates, proteins, and fats, which is frequently termed the "Kreb citric acid cycle." The need for information concerning the biosynthesis of citric acid has thus, in turn, become important. Considerable progress has been made recently in phases of this problem pertaining to precursors and enzymes.

One of the first investigations bearing on the precursors of citric acid was that of a Yale group,[1] who found that the intravenous administration of the sodium salts of either malic, fumaric, or succinic acids was followed by a pronounced increase in citric acid in the urine, indicating that these substances served as citrate precursors. The Yale workers suggested chemical steps whereby the synthesis of citric acid from the above acids could occur. The above results, together with others, were incorporated by Krebs [2] into the now well-known "citric acid cycle." Krebs postulated that malic acid was converted to oxalacetic acid by the loss of two hydrogen atoms and that this then combined with pyruvic acid to form a seven-carbon intermediate compound, which then was converted to citric acid. Subsequent work, however, indicated that a two-carbon fragment, probably acetyl phosphate, combined with the oxalacetic acid directly to form citric acid. This has currently been verified with the use of oxalacetate labeled with radioactive carbon 14 [3] and by enzymatic studies with the use of acetate and oxalacetate.[4] The present concept that citric acid is synthesized from an acetyl group and oxalacetate is of considerable importance, since these two substances, in turn, arise from the metabolic breakdown of carbohydrates, fats, and proteins in the body. The concept of citric acid as a key intermediate in the "final common pathway" of catabolism is thus supported.

Other recent work has contributed to the elucidation of the enzymatic mechanism by which citric acid is synthesized in vivo. The results from several laboratories [5] have indicated that coenzyme A, formed from pantothenic acid, is involved in the biosynthesis of citric acid. Tissues from pantothenic-acid-deficient animals or yeast grown in a pantothenic-acid-deficient medium showed a decided reduction in ability to form citric acid from its precursors. Recently, the classical work of Ochoa and his group [6] at New York University has demonstrated the need of several other factors in the biosynthesis of citrate. One is a "condensing enzyme," which these investigators have isolated in crystalline form.[6a] Other factors concerned [6b] include magnesium ions, adenosine triphosphate, and, of course, the direct precursors, the acetyl group and oxalacetate, and coenzyme A.

These fundamental studies at once assume practical significance in this day of possible atomic warfare. A current report [7] indicates that there is a decided inhibition of citric acid synthesis in certain tissues of animals subjected to x-irradiation, presumably by way of the inactivation of the enzymatic mechanism of synthesis. This observation may well explain, in part at least, the damaging effects of certain types of radiations on tissues, inasmuch as the cells of these tissues are dependent for their viability on the energy released from the oxidation of metabolites by way of the citric acid cycle.

DIGITALIS AND POTASSIUM

A recent report by Lown, Salzberg, Enselberg, and Weston [1] throws further light on the long-recognized relation between potassium metabolism and the cardiac effects of digitalis. Ten patients in congestive heart failure served as subjects in this investigation. The threshold of mild toxicity to rapidly acting cardiac glycosides was determined during a control period and following procedures designed to induce a depletion of potassium. Criteria of toxicity were based on electrocardiographic findings of ventricular extrasystoles, impairment of auriculoventricular conduction, or alterations in the pacemaker. The gross potassium balance was determined by changes in urinary potassium excretion. One of four patients given mercurial diuretics after pretreatment with ammonium chloride showed an increased urinary potassium excretion and an increased sensitivity to acetyl strophanthidin, while two others showed no significant change in potassium excretion and no signs of digitalis poisoning. In the fourth patient, the threshold for ouabain toxicity after mercurial diuretics was greatly increased when potassium citrate was administered. Again, severe toxic symptoms followed therapy with mercurial diuretics in a patient on a constant maintenance dose of digoxin. Signs of toxicity did not develop, however, if potassium citrate was administered on days when the diuretic was given. Two patients depleted of potassium by vomiting,

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diarrhea, and malnutrition appeared to be markedly sensitive to acetyl strophanthidin, though the serum potassium was significantly lowered in only one. In another patient, signs of digitalis toxicity could be abolished by oral potassium and reintroduced by mercurial diuresis. Nine days after the digitalis preparation was discontinued, mercurial diuretics failed to elicit digitalis toxicity. However, administration of insulin and glucose resulted in a decrease in serum potassium and the development of severe digitalis toxicity, which was abolished by potassium citrate. After the digitalis had been withheld for six weeks, glucose and insulin failed to induce signs of toxicity.

Since no significant changes in serum (or extracellular) potassium were observed in eight of the 10 patients, the authors concluded that the observed increased sensitivity to cardiac glycosides probably results from alterations in intracellular potassium distribution. That the effects are not due to simultaneous changes in distribution of water and electrolytes other than potassium is indicated by preliminary studies in which these variables were controlled. With the use of an artificial kidney, digitalis poisoning was induced by selective removal of potassium and abolished by restoration of the removed potassium. The results reported by Lown and his associates not only indicate that depletion of potassium increases the sensitivity of the heart to digitalis but suggest that the clinically observed increased sensitivity to digitalis in such conditions as acute myocardial infarction, pulmonary embolism, and acute infections may be due to the negative potassium balance which is a part of the bodily response to acute stress.

SYPHILIS CONTROL

The statement is heard with increasing frequency that syphilis is a vanishing disease. Many feel that penicillin therapy plus a continued nationwide program of case finding and education will soon relegate syphilis to the minor status of smallpox, typhoid and diphtheria. Others adopt a more conservative attitude. In a penetrating analysis, Moore [1] points out that the long term trends in the incidence of syphilis have not been altered dramatically by antibiotic therapy and that the ultimate goal of eradication may be more distant than the optimistic would have us believe.

Available data indicate that there has been a steady decrease in the incidence of syphilis in Europe and the United States for almost a century and that this decline has been interrupted only by temporary increases in morbidity during wars or periods of civil unrest. Two observations provide clues as to the mechanism of this decline: 1. It began long before the discovery of specific therapy for syphilis or the institution of public health measures for its control. 2. It has been accompanied by a progressive decrease in the acuteness of the disease, so that an infection that was often rapidly fatal in the 15th century has evolved into one of great chronicity. These observations suggest that a gradual process of adaptation has led to a decrease in the virulence of the parasite or an increase in the resistance of the host. In addition, there is evidence that the progressive improvement in socioeconomic conditions in Western civilization has contributed to the reduction in the incidence of syphilis. Whatever the mechanisms responsible for the decrease in morbidity before the days of specific therapy, it may be assumed that they are still operative and that they may be at least partially responsible for the continued decline.

Since the introduction of specific arsenical therapy in 1910, the rate of decline seems to have been accelerated somewhat. It is difficult to make precise statements because of the incompleteness of the available data and the tendency of the periodic fluctuations in the incidence of syphilis to obscure the long-range trends. It is even more difficult to evaluate the effect of a relatively new drug such as penicillin on the curve of incidence, since the total duration of penicillin therapy has not yet exceeded one of the naturally recurring cycles of increase and decrease in the incidence of the disease. It is tempting to attribute the sharp decrease in the attack rate in the past three or four years to the widespread use of penicillin, but the fact cannot be ignored that a decline at exactly the same rate occurred after World War I, before the discovery of penicillin. At least another decade of experience with penicillin will be required before its effect on the incidence of syphilis can be measured accurately. Its value in the control of the individual case of syphilis remains unchallenged, however. It is to date the drug of choice in this disease—effective, rapidly acting, nontoxic, and inexpensive.

A factor of equal or greater importance in the accelerated decline in the incidence of syphilis has been the application of modern public health measures to the control of venereal disease. Public health authorities in this country and in Europe have accomplished a prodigious task in finding and treating millions of infected persons and in educating the public. Their efforts are reflected in the continuing decrease in the infant and adult morbidity and mortality from syphilis.

According to Moore, however, the present rate of decline is not yet sufficiently significant (except possibly in Scandinavia) to promise eventual complete control in any country, to permit a relaxation of control efforts or to set a time limit on the achievement of the desired goal. In this country in 1949, there were still an estimated 3,000,000 persons with serologic evidence of infection with syphilis,[2] and an additional 150,000 persons acquired the infection in that year. Fourteen thousand syphilitic infants were born and 13,000 persons died of syphilis in the same year. Six thousand persons were sent to mental institutions because of syphilis. These figures continue to decrease, but past experience has shown that eradication of a disease in one country is not enough. The continual population exchanges permitted by modern transportation make new epidemics possible as long as an endemic focus remains anywhere in the world. Densely populated China and India have a high incidence

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of syphilis, and these countries constitute a potential public health danger.

Moreover, as Moore points out, no infectious disease in the history of medicine has been eradicated or even partially controlled by the sole process of treatment of infected persons. Immunization may be the ultimate goal of public health control, but this in turn awaits further research on the problem of cultivation of the Treponema pallidum. Both public and private laboratories are doing their utmost to solve this problem, but financial support is needed. In the long run this type of approach is the most economical one, because global control by present methods is a practical impossibility.

MUSCULAR CONTRACTION

Muscle tissue accounts for about 40% of the mass of the body; it is obvious, therefore, that the pattern of metabolism of muscle dominates that of the body as a whole. The characteristic chemical reaction of the muscle —oxidation with the production of heat—is looked on as typical of that of the body as a whole. Of the muscle mass, about 80% of the solids is accounted for by proteins, which have long been looked on as possessing unique properties, both chemical and physical. The transformation of energy which is evolved in the course of glycolysis in muscle to mechanical work produced by the muscle is a phenomenon that is yet only partly understood. However, recent studies of muscle proteins themselves, along with the adaptation of new physical techniques, have greatly facilitated a better understanding of the intricate physical chemistry of muscular contraction.

An early suggestion of the unusual properties of muscle protein arose from the observation of Engelhardt and Ljubimowa,[1] who reported that the globulin of muscle could release phosphoric acid from adenosinetriphosphate. In other words, the protein fraction soluble in salt solution (myosin) exhibited enzymatic activity and this activity could not be separated from the protein itself. This observation has been confirmed by many investigators, although it has been held [2] that the enzymatic activity can be separated from the muscle globulin and, also, that there are other adenosinetriphosphatases than myosin.[3] The significance of the enzymatic degradation of adenosinetriphosphate by muscle protein is that the release of a relatively large amount of energy is thereby brought about; this chemical energy is involved in the contraction of the muscle.

The beginning of the newer concept of the functional activity of muscle proteins was discovery [4] that a constituent of the muscle stroma (actin) combines with the globulin myosin to form the protein complex known as actomyosin and that it is this complex that is the contractile unit in muscle tissue. The actin itself as well as the actomyosin complex can exist in molecules of globular form and also of fibrous form, and it appears that inorganic salts are required to promote the change of globular actomyosin to the fibrous form and that adenosinetriphosphate, likewise, is necessary for this transformation.[5] With the use of the electron microscope, F-actin was observed to form from G-actin; these fibers were long and 100 A thick and show conspicuous cross striations,[6] which fact may account for the changes in flow birefringence early seen when myosin reacts with adenosinetriphosphate.[7]

On the basis of the data currently available, it appears that the relaxed muscle is rich in energy and that G-actin and the complex of myosin and adenosinetriphosphate coexist in the dissociated form; on stimulation and in the presence of magnesium and potassium ions (among others) and of adenosinetriphosphate, G-actomyosin is formed which is still enzymatically inactive. There is a rapid change from G-actomyosin-adenosinetriphosphate to F-actomyosin-adenosinetriphosphate in the presence of salts and with the evolution of energy; the F-actomyosin is contractile in this energy-poor state and becomes enzymatically active, yielding energy which is absorbed by the system in reestablishing the high energy level of the relaxed muscle in which G-actin and myosin-adenosinetriphosphate are again separated. In this scheme, the energy appears to be used in the reestablishment of the energy-rich relaxed muscle, not for the contraction of the fibers of actomyosin. The need for further clarification of the intimate details of the process is apparent; with such conditions as myasthenia gravis and other muscular dystrophies in mind, it is plain that the rewards of a better understanding of muscular contraction will be enormous.

OPIATES AND PANCREATIC ENZYMES

Elevated levels of serum amylase and lipase are generally regarded as reliable evidence of pancreatic disease. Recent work, however, has demonstrated that the serum concentration of these enzymes may rise following the administration of opiates in the absence of pancreatic disease. In the course of studies on pancreatic function, Burke and co-workers [1] observed an increase in serum amylase in three patients without evidence of pancreatic disease following the subcutaneous injection of 16 mg. of morphine sulfate. At about the same time Gross and associates [2] observed elevated serum amylase and lipase levels following opiate administration in a patient whose pancreas appeared normal at the time of exploratory laparotomy. Suspecting that the opiate was responsible, they gave the patient 0.13 gm. of codeine sulfate hypodermically on two subsequent occasions and each time observed a pronounced rise after the injection. The

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amylase levels remained elevated for 24 hours. Extending their studies, they obtained similar results in five additional patients with biliary dyskinesia, but without evidence of pancreatic disease, and in one patient with penetrating duodenal ulcer. Twenty-one other patients with various diseases of the liver, gallbladder, stomach, and pancreas did not show this phenomenon.

The mechanism of this reaction is not entirely clear, but presumably morphine and its derivatives induce a spasm of the sphincter of Oddi, which in certain individuals who are anatomically [1] or allergically [2] predisposed results in an increase in pancreatic intraductal pressure and a reflux of enzymes into the blood stream. Regardless of the mechanism, it is apparent that this reaction, when it occurs, is a potential source of error in the clinical interpretation of elevated serum enzyme values. Often patients who are suspected of having pancreatitis are given morphine or codeine before blood is obtained for enzyme determination. In such circumstances, it is well to keep in mind that the serum enzyme levels may be altered by the opiates.

ULTRASONICS IN DIAGNOSIS

Because of their ability to penetrate tissues, high frequency acoustic vibrations have found both diagnostic and therapeutic applications in medicine. Until recently the therapeutic applications have received major emphasis. The thermal, mechanical, and chemical changes produced by ultrasonic vibrations as they pass through tissues have been utilized in the treatment of a great variety of diseases,[1] chiefly in Europe. Good results have been reported, but unfortunately most of the therapeutic evaluations have been based on clinical impressions alone and few controlled observations have been made. As a result, very little accurate scientific information on the therapeutic effectiveness of ultrasound has been obtained. The current studies of Nelson and co-workers [2] offer promise of correcting this situation.

In the last few years, increasing attention has been focused on the use of ultrasound in diagnosis. It has been found that alterations in the density or elasticity of a tissue can be detected with the aid of ultrasonic waves. Two approaches are available. In one, the tissue is exposed to the waves and the ultrasonic echoes returning to the surface are studied; in the other, the ultrasonic energy passing through the tissue is measured. The first method is an adaptation of a technique used for years in industry for the detection of flaws in metal castings and in navigation for depth sounding. It is based on the principle that ultrasonic waves passing through a medium are reflected back to the source as echoes when they encounter a surface (interface) of changing density within the medium. Thus, when the waves strike a tumor, a foreign body, or a collection of fluid within a tissue, some of them are reflected back to the surface as echoes. The intensity and character of the echoes give clues as to the consistency of the lesion, and the time required for the echoes to return to the surface gives an indication of the depth of the lesion. Using this technique, Ludwig and Struthers [3] have been able to detect gallstones and foreign bodies in animal tissues, and more recently French, Wild, and Neal [4] have reported the accurate localization of intracerebral neoplasms in a human brain removed immediately after death. Wild and Neal [5] have also reported distinguishing between carcinomatous and noncarcinomatous tumors of the breast by this method in two patients. The ultrasonic vibrations employed in the last two experiments were generated, transmitted, and received by a small instrument (ultrasonoscope), no larger than the bell of a stethoscope, that could easily be applied to any part of the body surface. Such an ultrasonoscope consists of a small metal chamber containing a piezoelectric crystal capable of converting high frequency electrical impulses into high frequency (15,000,000 cycles per second) mechanical vibrations. This crystal, activated intermittently by an electronic oscillator, sends pulses of ultrasonic energy into the tissues and receives the returning echoes during its quiescent period. These are reconverted by the crystal to electrical impulses that are recorded by a synchroscope. The final tracing appears as a series of waves resembling an electrocardiogram.

In the second diagnostic technique mentioned, separate transmitting and receiving crystals are placed on opposite sides of the tissue to be examined and the relative transmission of ultrasonic vibrations by different areas of tissue is measured. Since this transmission depends on the density, elasticity, homogeneity, and viscosity of the medium, variations in transmission indicate variations in texture of the tissue. By this method, Dussik [6] and Ballantine and associates [7] have obtained ultrasonic ventriculograms without air injection in living subjects and Denier [8] has detected intracranial foreign bodies in animals. In both the echo technique and the selective transmission method, ultrasonic vibrations of such short duration and low intensity are used that no symptoms are produced and no tissue alterations are detectable.[9] While both diagnostic methods are still capable of technical refinement, the results already obtained are definitely encouraging. These are fascinating developments that will bear watching.

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2. Nelson, P. A.; Herrick, J. F., and Krusen, F. H.: Temperatures Produced in Bone Marrow, Bone and Adjacent Tissue by Ultrasonic Diathermy: Experimental Study, Arch. Phys. Med. **31**: 687 (Nov.) 1950.

3. Ludwig, G. D., and Struthers, F. W.: Considerations Underlying the Use of Ultrasound to Detect Gallstones and Foreign Bodies in Tissue, Report No. 4, Nav. M. Research Inst. Project NM004001 (June 16) 1949, cited by Nelson.[1]

4. French, L. A.; Wild, J. J., and Neal, D.: Detection of Cerebral Tumors by Ultrasonic Pulses: Pilot Studies on Postmortem Material, Cancer **3**: 705 (July) 1950.

5. Wild, J. J., and Neal, D.: Use of High Frequency Ultrasonic Waves for Detecting Changes of Texture in Living Tissues, Lancet **260**: 655 (March 24) 1951.

6. Dussik, K. T.; Dussik, F., and Wyt, L.: Auf dem Wege zur Hyperphonographie des Gehirnes, Wien. med. Wchnschr. **97**: 425 (Oct. 4) 1947.

7. Ballantine, H. T., Jr.; Bolt, R. H.; Hueter, T. F., and Ludwig, G. D.: On the Detection of Intracranial Pathology by Ultrasound, Science **112**: 525 (Nov. 3) 1950.

8. Denier, A.: Essai de Détection de Masse Tumoral du Cerveau par Ultra-Sonoscopie, Compt. Rend. Soc. Biol. **140**: 763 (Oct.) 1946.

9. Ballantine, Bolt, Hueter and Ludwig.[7] French, L. A.; Wild, J. J., and Neal, D.: The Experimental Application of Ultrasonics to the Localization of Brain Tumors, J. Neurosurg. **8**: 198 (March) 1951.

ORGANIZATION SECTION

THE SCIENTIFIC EXHIBIT, LOS ANGELES CLINICAL SESSION

The Clinical Session of the American Medical Association will be held in Los Angeles, Dec. 4 to 7, 1951, at which time the Scientific Exhibit will again be one of the outstanding features. It is planned to have the Scientific Exhibit located on the balcony floor of the Shrine Convention Hall, easily reached by stairways from the Technical Exposition on the first floor and connecting with Al Malaikah Temple, in which will be located the lectures, clinical presentations, television, and motion pictures.

There will be special exhibits on fractures, on overweight, nutrition and health, and on noise in industry, presented by the various special exhibit committees. Groups of exhibits on cancer, diabetes, and heart disease will be well developed with the advice and cooperation of specialists in those subjects. Groups of exhibits on obstetrics and gynecology, pediatrics, internal medicine, surgery, dermatology, and miscellaneous subjects will be given prominent attention. While the interests of the specialist will not be overlooked, the main emphasis of the exhibit will be placed on the teaching value for the physician in general practice.

The Committee on Scientific Exhibit includes E. J. McCormick, M.D., Toledo, Ohio, Chairman; L. W. Larson, M.D., Bismarck, N. D., and Thomas P. Murdock, M.D., Meriden, Conn., with George F. Lull, M.D., Chicago; Ernest B. Howard, M.D., Chicago, and Austin Smith, M.D., Chicago, as ex officio members. Thomas G. Hull, Ph.D., Chicago, is Director of the Scientific Exhibit.

Application blanks for space are now available and may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 N. Dearborn St., Chicago 10.

MEDICAL LEGISLATION

FEDERAL

National Advisory Committee for the Blind

Four identical bills have been introduced proposing to establish a National Advisory Committee for the Blind to study existing federal, state, and local activities related to the granting of service to the blind. The committee would be charged with making a report with recommendations to the President and Congress prior to Jan. 3, 1953, for accomplishing coordination of effort, attainment of maximum benefits for the blind, and such other matters as the committee deems appropriate. The committee would be composed of nine members to be appointed by the President, with not more than five members from the same political party. The committee would appoint a staff without regard to civil service laws. The bills would authorize the committee to hold hearings and to secure information from any executive department, bureau, or other government agency. Power to subpoena witnesses is included. The sum of $50,000 is proposed to finance the project. The four bills are S. 1714, by Senator Lehman of New York, for himself and three other senators; H. R. 4079, by Representative Boggs of Delaware; H. R. 4212, by Representative Priest of Tennessee, and H. R. 4605, by Representative Elliott of Alabama.

Hospital for Juvenile Drug Addicts

Four identical bills have been introduced in the House of Representatives which propose to establish a hospital for juvenile drug addicts. These bills would authorize the Federal Security Administrator to use any funds available for the remodeling of the Ellis Island Marine Hospital in New York for the purpose of making that hospital available for the treatment, under the supervision of the Surgeon General of the Public Health Service, of juvenile drug addicts. After the reopening of the hospital, the Surgeon General is further authorized to admit for care and treatment any juvenile drug addict on his own application or that of his parents or on the recommendation of state or city correctional officers. A juvenile drug addict is defined as any person under 21 who is known to use, other than under the immediate supervision and direction of a licensed physician, any narcotic drug or derivative thereof. These four identical bills are H. R. 4549, introduced by Representative Clemente of New York; H. R. 4569, by Representative Dollinger of New York; H. R. 4577, by Representative Fine of New York, and H. R. 4579, by Representative Klein of New York.

Antivivisection

Representative Baring of Nevada introduced H. R. 4519, which proposes to protect live dogs and cats against torture, brutality, and useless painful experimentation within the District of Columbia. This bill provides for fine and imprisonment for any person who experiments or operates in the District of Columbia on living dogs or cats for any purpose other than the healing, curing, or sterilization of such animals.

Problems of the Aging

Six identical house resolutions have been introduced which would authorize a select committee on problems of the aging to be composed of seven members of the House of Representatives, all appointed by the Speaker. This Select Committee would be charged with investigating the status of the older age group with respect to its manpower potential and the basic problems in the fields of employment, health, education, and community services in connection with the utilization of this group and the federal government's responsibility in the problem. The committee would report to the House, as soon as practicable during the present Congress, the results of its studies and recommendations. The usual authority is given to the committee to require by subpoena or otherwise, the attendance and testimony of witnesses and the production of books, records, and other material.

These six resolutions are all identical with H. RES. 238, reported previously. They are H. RES. 265, introduced by Representative Bolling of Missouri; H. RES. 266, by Representative Case of New Jersey; H. RES. 267, by Representative Heselton of Massachusetts; H. RES. 269, by Representative Price of Illinois; H. RES. 276, by Representative McKinnon of California, and H. RES. 284, by Representative Elliott of Alabama.

STATE

Illinois

Bills Introduced.—H. 1256 and S. 785 propose the establishment of a **narcotics hospital** in the City of Chicago. H. 1257 and S. 784 propose the establishment of three out-patient clinics in the City of Chicago for the treatment of **narcotic addicts.**

Massachusetts

Bills Introduced.—H. 2577 proposes to amend the **narcotic law** by making it unlawful to sell, furnish or give away narcotic drugs to a minor. H. 2585, Appendix D, proposes to authorize a special commission making an investigation and study relative to **high blood pressure** to print and sell its report. H. 2585, Appendix E, proposes to extend the existence of the special committee investigating the problem of **high blood pressure.**

Michigan

Bill Introduced.—S. C. R. 62 proposes the creation of a special committee to study problems pertaining to **narcotics** to determine whether or not present state laws are adequate.

Missouri

Bill Enacted.—S. 137 was approved June 25, 1951. It amends the workmen's compensation law by, among other things, providing that if an employee desires, he shall have the **right to select his own physician,** surgeon or other such person at his own expense.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

PROCEEDINGS OF THE ATLANTIC CITY SESSION

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the Atlantic City Session was one of the largest in the history of the American Medical Association and, in general quality of material shown and in teaching value, was also one of the best. The location in the Lower Level of Convention Hall seemed to meet with the approval of visitors, allowing for wider aisles, less crowding, and a general atmosphere of serious study. The advantages of the arrangements outweighed certain disadvantages. There were 297 exhibits occupying 306 booths.

The several special features attracted large and attentive audiences. The Special Exhibit on Fractures, an annual affair since 1926, and as popular as ever, occupied six booths, where demonstrations were carried on simultaneously and continuously under the guidance of Kellogg Speed, M.D., Chicago, assisted by Frederick A. Jostes, M.D., St. Louis, and Gordon M. Morrison, M.D., Boston, and a large group of demonstrators.

The exhibit symposium on Overweight, Nutrition, and Health occupied five booths, with an adjacent conference room seating 125 persons. Enthusiastic audiences overcrowded the available facilities most of the week. The committee in charge consisted of James R. Wilson, M.D., chairman, Chicago; Herbert H. Marks, New York, and Arnold B. Kurlander, M.D., Washington, D. C.

The special exhibit on fresh pathology was presented with the cooperation of the several medical schools and various hospitals in Philadelphia as well as the Atlantic City Hospital. The Section on Urology cooperated with the Section on Pathology and Physiology in presenting specimens. William P. Belk, M.D., Ernest E. Aegerter, M.D., Jefferson H. Clark, M.D., and Peter A. Herbut, M.D., were assisted by a large group of demonstrators.

Diabetes demonstrations were carried on in two booths and in an adjoining conference room under the guidance of Howard F. Root, M.D., Boston. Facilities were crowded to capacity at all times.

SECTION EXHIBITS

Groups of exhibits were presented by the various sections of the Scientific Assembly with the cooperation of the section representatives. The section representatives, together with the section secretaries, were more than usually active in seeking out new exhibits and in advice and assistance to the Committee on Scientific Exhibit. The result was 436 applications for space, besides numerous inquiries which were discouraged because there was no possibility of accommodating additional exhibits.

Anesthesiology.—There were 10 exhibits, of which one received a certificate of merit and one an honorable mention. The section representative was Scott M. Smith, M.D., Salt Lake City.

Dermatology and Syphilology.—The section had 13 exhibits. One received a certificate of merit and one an honorable mention. Exhibits on ionizing radiations was one of the features of this section. James A. Webster, M.D., Chicago, was the section representative.

Diseases of the Chest.—There were 12 exhibits in this group, with four awards, consisting of a gold medal, a certificate of merit, and two honorable mentions. The section representative was Edwin R. Levine, M.D., Chicago.

Experimental Medicine and Therapeutics.—In this group there were 15 exhibits, of which four received awards. There was a silver medal, a bronze medal, a certificate of merit, and an honorable mention. Robert W. Wilkins, M.D., Boston, was the section representative.

Gastro-Enterology and Proctology.—There were 12 exhibits in the group, of which two received awards, consisting of a certificate of merit and an honorable mention. The section representative for Gastro-Enteroiogy was Everett D. Kiefer, M.D., Boston, and for Proctology, J. P. Nesselrod, M.D., Evanston, Ill.

General Practice.—This section had 11 exhibits with two awards, consisting of a certificate of merit and an honorable mention. Charles E. McArthur, M.D., Olympia, Wash., was the section representative.

Internal Medicine.—There were 18 exhibits in the group, with five awards, consisting of a certificate of merit and four honorable mentions. The section representative was Wesley W. Spink, M.D., Minneapolis.

Laryngology, Otology and Rhinology.—The section had 20 exhibits, of which four received awards, consisting of a certificate of merit and three honorable mentions. Members of the section cooperated in the group of exhibits on Noise in Industry. The section representative was Francis W. Davison, M.D., Danville, Pa.

Nervous and Mental Diseases.—There were 17 exhibits in the group, with three awards, consisting of a certificate of merit and two honorable mentions. Leon J. Whitsell, M.D., San Francisco, was the section representative.

Obstetrics and Gynecology.—The section had 12 exhibits, of which three received awards, consisting of a gold medal, a certificate of merit, and an honorable mention. Frederick H. Falls, M.D., Chicago, was the section representative.

Ophthalmology.—This section had nine exhibits, with four awards, consisting of a certificate of merit and three honorable mentions. The section exhibit committee was composed of Georgiana D. Theobald, M.D., Oak Park, Ill., chairman; Donald J. Lyle, M.D., Cincinnati, and Phillips Thygeson, M.D., San Jose, Calif.

Orthopedic Surgery.—There were 15 exhibits in the group, of which three received awards, consisting of one certificate of merit and two honorable mentions. Robert J. Joplin, M.D., Boston, was the section representative.

Pathology and Physiology.—This section had 20 exhibits, of which four received awards, consisting of one certificate of merit and three honorable mentions. Members of the section cooperated in the Special Exhibit on Fresh Pathology. Frank W. Konzelmann, M.D., Washington, D. C., served as the section representative.

Pediatrics.—There were 22 exhibits in the section, of which four received awards, consisting of one gold medal, one certificate of merit, and two honorable mentions. The section representative was F. Thomas Mitchell, M.D., Memphis, Tenn.

Physical Medicine and Rehabilitation.—There were nine exhibits in this section, of which three received awards, including one certificate of merit and two honorable mentions. Arthur L. Watkins, M.D., Boston, served as representative to the section.

Preventive and Industrial Medicine and Public Health.—There were 13 exhibits in the section, of which four received awards, consisting of one certificate of merit and three honorable mentions. A special feature was the group of exhibits on Noise in Industry sponsored by the Council on Industrial Health and the Council on Physical Medicine and Rehabilitation of the American Medical Association, together with the Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology, and the Acoustical Society of America. Paul A. Davis, M.D., Akron, Ohio, was the section representative.

Radiology.—There were 15 exhibits in the section, of which four received awards, including one certificate of merit and three honorable mentions. Richard H. Chamberlain, M.D., Philadelphia, was the section representative.

Surgery, General and Abdominal.—There were 27 exhibits in this section, of which five received awards, consisting of one

silver medal, one bronze medal, one certificate of merit, and two honorable mentions. Walter G. Maddock, M.D., Chicago, was the section representative.

Urology.—This section had nine exhibits, of which two received awards, consisting of one certificate of merit and one honorable mention. The section participated in the Special Exhibit on Fresh Pathology with urologic specimens each afternoon. Another feature was a daily discussion of all exhibits in the Urology Section. The section exhibit committee consisted of Roger W. Barnes, M.D., Los Angeles, chairman; Rubin H. Flocks, M.D., Iowa City, and George H. Ewell, M.D., Madison, Wis.

There were nine miscellaneous exhibits, of which two received awards, consisting of one certificate of merit and one honorable mention.

MOTION PICTURES

Motion pictures were shown in two rooms on the Main Floor adjacent to the Technical Exposition. Thirty-seven films were presented once each day during the week, with the authors of 11 of the films being present to discuss them. The films were selected after careful previewing by competent authorities from more than 100 applications. The program was carried on with the cooperation of the Committee on Medical Motion Pictures.

AWARDS

Medal awards were made to exhibits for original investigation and for teaching value. Certificates of Merit and Honorable Mention awards were presented to the best exhibits in each section. The members of the Committee on Awards worked long and faithfully and were assisted by section representatives and other specialists called in for advice and consultation.

REPORT OF COMMITTEE ON AWARDS

The Committee on Awards made the following report:

MEDAL AWARDS

Group I.—Awards in this group are made for exhibits of individual investigations, which are judged on the basis of originality and excellence of presentation. Duplicate Gold Medals are awarded in Group I.

The GOLD MEDAL to Robert P. Glover, Charles P. Bailey, and Thomas J. E. O'Neill, Hahnemann Medical College and Hospital, Episcopal Hospital, Philadelphia, for the exhibit on Intracardiac Surgery for Acquired and Congenital Heart Disease.

The GOLD MEDAL to Willis J. Potts, William L. Riker, and Robert DeBord, Children's Memorial Hospital, Chicago, for the exhibit on Surgery for Congenital Heart Disease.

The SILVER MEDAL to David Cayer and W. E. Cornatzer, Bowman Gray School of Medicine, Winston-Salem, N. C., for the exhibit on Role of Lipotropic Agents in Liver Disease—A Study of Phospholipide Synthesis Using Radiophosphorus.

The BRONZE MEDAL to William P. Boger, Walter V. Matteucci, Nelson H. Schimmel, and Harrison F. Flippin, Philadelphia General Hospital, Philadelphia, for the exhibit on Benemid—Its Influence on PAS, Penicillin, and Other Antibiotics.

Group II.—Awards in this group are made for exhibits which do not exemplify purely experimental studies but are judged on the basis of excellence of correlating facts and excellence of presentation.

The GOLD MEDAL to Walter W. Williams, Springfield Hospital, Springfield, Mass., and Irving F. Stein and Melvin R. Cohen, Michael Reese Hospital, Chicago, for the exhibit on Fertility and Sterility—Diagnostic and Prognostic Procedures.

The SILVER MEDAL to C. Stuart Welch and William Dameshek, Pratt Diagnostic Clinic, New England Center Hospital, Boston, for the exhibit on Surgery of the Spleen.

The BRONZE MEDAL to Robert R. Linton, Chester M. Jones, John J. Cranley Jr., James L. Buchanan, Daniel S. Ellis, and Arthur French, Brookline, Mass., for the exhibit on the Surgical Treatment of Bleeding Esophageal Varices (Portal Hypertension).

SECTION AWARDS

Certificates of Merit and Honorable Mention are awarded to the following in each Section.

Section on Anesthesiology.—Certificate of Merit to Lloyd D. Seager and Edwin L. Rushia, University of Arkansas School of Medicine, Little Rock, Ark., for the exhibit on Curare Antidotes—Anticurare Action of Some Neostigmine Derivatives.

Honorable Mention to John G. P. Cleland, University of Oregon Medical School and Oregon City Hospital, Oregon City, Ore., for the exhibit on Continuous Segmental Analgesia in Obstetrics and Surgery.

Section on Dermatology and Syphilology.—Certificate of Merit to Robert R. Kierland, P. A. O'Leary, L. A. Brunsting, and J. W. Didcoct, Mayo Clinic, Rochester, Minn., for the exhibit on Cortisone and ACTH—Their Use in Dermatology.

Honorable Mention to Eugene S. Bereston and Maurice Sullivan, Johns Hopkins Hospital, Baltimore, for the exhibit on Topical Therapy of Tinea Capitis Due to M. Audouini.

Section on Diseases of the Chest.—Certificate of Merit to Chevalier L. Jackson, John Franklin Huber, and Charles M. Norris, Temple University School of Medicine, Philadelphia, for the exhibit on the Segmental Bronchi and Bronchopulmonary Segments.

Honorable Mention to Hurley L. Motley, Burgess Gordon, Peter A. Theodos, and Joseph F. Tomashefski, The Barton Memorial Hospital, Philadelphia, for the exhibit on Studies of Pulmonary Function Impairment in Coal Miners.

Honorable Mention to Samuel H. Belgorod, New York, for the exhibit on Chemotherapy in Tuberculosis.

Section on Experimental Medicine and Therapeutics.—Certificate of Merit to J. L. Bollman, Mayo Clinic, Rochester, Minn., for the exhibit on Liver Lymph and Intestinal Lymph in Experimental Cirrhosis and Ascites.

Honorable Mention to Augustus Gibson, Charles E. Lyght, Stephen Fromer, and Lyon P. Strean, Merck & Company, Inc., Rahway, N. J., for the exhibit on Cortisone as an Investigative and Therapeutic Agent.

Section on Gastro-Enterology and Proctology.—Certificate of Merit to Asher Winkelstein, The Mount Sinai Hospital, New York, for the exhibit on Banthine for Peptic Ulcer—Clinical and Physiologic Studies.

Honorable Mention to Paul L. Shallenberger, Charles H. DeWan, Clayton B. Weed Jr., and John Reganis, Guthrie Clinic, Sayre, Pa., for the exhibit on Gastroscopic Biopsy.

Section on General Practice.—Certificate of Merit to Karl Haase, Veterans Administration Center, Los Angeles, and Bernard Daitz, Department of Medicine and Surgery, Veterans Administration, Washington, D. C., for the exhibit on Chronic Illness—A Growing Challenge.

Honorable Mention to Steven O. Schwartz and Sherman R. Kaplan, Hektoen Institute for Medical Research of the Cook County Hospital, Chicago, for the exhibit on Iron Deficiency Anemia—A Dynamic Concept.

Section on Internal Medicine.—Certificate of Merit to Charles P. Emerson Jr. and Franklin G. Ebaugh Jr., Boston University School of Medicine and Evans Memorial Hospital, Carl W. Walter, James L. Tullis, C. A. Janeway, L. K. Diamond, John G. Gibson II, Edward S. Buckley Jr., and Theodore Sack, Harvard Medical School, Peter Bent Brigham Hospital and Children's Hospital, Boston, for the exhibit on New Developments in Collection and Processing of Donor Blood.

Honorable Mention to Herbert C. Allen Jr., Raymond L. Libby, Benedict Cassen, and William E. Goodwin, Radioisotope Unit, Veterans Administration Center and University of Cali-

fornia at Los Angeles School of Medicine, Los Angeles, for the exhibit on The Scintillation Counter—A New Diagnostic Instrument.

Honorable Mention to Arthur M. Master, Isaac Goldstein, and Max B. Walters, Mount Sinai Hospital, New York, for the exhibit on New Limits of Normal Blood Pressure—Clinical Application.

Honorable Mention to Ella Roberts, Marian Wikingsson, and C. Robert Wells, Philadelphia, for the exhibit on Ten Years' Experience with Sulfonamides in the Prophylaxis of Rheumatic Fever.

Honorable Mention to Kendall Emerson Jr., Stanley Kahn, John Vester, and Dexter Nelson, Peter Bent Brigham Hospital, Boston, for the exhibit on Cation Exchange Resins of the Carboxyl Type in the Treatment of Edema.

Section on Laryngology, Otology and Rhinology.—Certificate of Merit to Aram Glorig, Silver Spring, Md., for the exhibit on Dihydrostreptomycin and Streptomycin and the Inner Ear.

Honorable Mention to Lawrence Reynolds, K. E. Corrigan, H. S. Hayden, and F. R. Birkhill, Harper Hospital, Detroit, for the exhibit on Radioactive Isotope Tracers in Early Detection of Malignancy.

Honorable Mention to William C. Thornell, University of Cincinnati College of Medicine, Cincinnati, for the exhibit on A New Intralaryngeal Approach for Arytenoidectomy in Bilateral Abductor Vocal Cord Paralysis.

Honorable Mention to Irvin Hantman, Georgetown University School of Medicine and Episcopal Eye, Ear and Throat Hospital, Washington, D. C., for the exhibit on Diseases of the Ear Drum.

Section on Nervous and Mental Diseases.—Certificate of Merit to Ernest Spiegel, Henry T. Wycis, Herbert Freed, and H. Baird, Temple University School of Medicine and Hospital, Philadelphia, for the exhibit on The Stereoencephalotome and Its Application.

Honorable Mention to Ralph B. Cloward, Honolulu, Hawaii, for the exhibit on Treatment of Ruptured Lumbar Disks by Intervertebral Fusion, Surgical Techniques and Statistics.

Honorable Mention to George E. Moore, Douglas A. Kohl, Shelley N. Chou, and William T. Peyton, University of Minnesota Hospitals, Minneapolis, for the exhibit on Use of Fluorescein and Radioactive Isotopes in Localization of Brain Tumors.

Section on Obstetrics and Gynecology.—Certificate of Merit to H. E. Nieburgs and E. R. Pund, Medical College of Georgia, Augusta, Ga., for the exhibit on Etiologic and Diagnostic Factors in Cervical Cancer.

Honorable Mention to Mario A. Castallo, Amos S. Wainer, and John M. Stack, Jefferson Medical College and Hospital, Philadelphia, for the exhibit on Experimental Recanalization of Fallopian Tubes.

Section on Ophthalmology.—Certificate of Merit to D. M. Gordon, J. M. McLean, and H. Koteen, Cornell University Medical College, New York, for the exhibit on ACTH and Cortisone in Ophthalmology.

Honorable Mention to David D. Donaldson, Howe Laboratory, Boston, for the exhibit on Stereophotographs of Anatomical Preparations for Teaching Neuro-ophthalmology.

Honorable Mention to Arthur J. Bedell, Albany, N. Y., for the exhibit on The Macular Region in the Elderly.

Honorable Mention to Glen G. Gibson, Robert W. Mather and Robert H. Peckham, Temple University School of Medicine, Philadelphia, for the exhibit on Diagrammatic and Photographic Presentation of Retinal Arteriolar Changes in Hypertension.

Section on Orthopedic Surgery.—Certificate of Merit to G. W. Hyatt, T. C. Turner, and Andrew Bassett, United States Naval Medical School, Bethesda, Md., for the exhibit on New Methods of Preserving Skin, Bone, and Blood Vessels.

Honorable Mention to George G. Rowe and Maurice B. Roche, Washington University School of Medicine, St. Louis, for the exhibit on The Separate Neural Arch.

Honorable Mention to Frederick Lee Liebolt and Louise Beury Flynn, New York Hospital, Cornell Medical Center, New York, for the exhibit on Injuries to the Menisci of the Knee Joint.

Section on Pathology and Physiology.—Certificate of Merit to Karl Singer and Amoz I. Chernoff, Medical Research Institute, Michael Reese Hospital, Chicago, for the exhibit on Pathogenesis of Sickle Cell Anemia and Other Hereditary Hemolytic Syndromes.

Honorable Mention to Hans Elias and Hans Popper, Chicago Medical School and Hektoen Institute of Medical Research, Cook County Hospital, Chicago, for the exhibit on Functional Anatomy of the Normal and Cirrhotic Liver.

Honorable Mention to Shepard Shapiro, New York, for the exhibit on Oral Anticoagulant Therapy.

Honorable Mention to Albert E. Bothe and F. O. Zillessen, Jeanes Hospital, Philadelphia, and A. J. Dalton, National Cancer Institute, Bethesda, Md., for the exhibit on the Golgi Material and Mitochondria in Benign and Malignant Lesions.

Section on Pediatrics.—Certificate of Merit to Benjamin M. Gasul, Egbert H. Fell, Maurice Lev, William P. Mavrelis, Oldrich Prec, and Raul Casas, Hektoen Institute of Medical Research, Cook County Children's Hospital, Presbyterian Hospital, and the University of Illinois College of Medicine, Chicago, for the exhibit on Congenital Heart Disease in Pediatrics—A Study of Over 700 Cases.

Honorable Mention to Leon Unger, A. Alvin Wolf, Albert H. Unger, and Tybee Sue Meyers, Northwestern University Medical School, Chicago, for the exhibit on Bronchial Asthma in Children.

Honorable Mention to Jay M. Arena and Grant Taylor, Duke Hospital, Durham, N. C., for the exhibit on Accidental Poisoning in Children.

Section on Physical Medicine and Rehabilitation.—Certificate of Merit to F. A. Hellebrandt and Sara Jane Houtz, Medical College of Virginia, Richmond, Va., and National Society for Crippled Children and Adults, Inc., for the exhibit on Evaluating the Physical Disabilities of the Cerebral Palsied.

Honorable Mention to Archer S. Gordon, Max S. Sadove, Frank Raymon, and Andrew C. Ivy, University of Illinois College of Medicine, Chicago, for the exhibit on Artificial Respiration—Recent Advances in Manual Methods.

Honorable Mention to Julia F. Herrick, Frank H. Krusen, Gordon M. Martin, and Earl C. Elkins, Mayo Foundation, Rochester, Minn., for the exhibit on Effects of Ultrasonic Energy on Tissues.

Section on Preventive and Industrial Medicine and Public Health.—Certificate of Merit to Werner Henle and M. Michael Sigel, Children's Hospital of Philadelphia, and University of Pennsylvania School of Medicine, Philadelphia, for the exhibit on Virus Diagnostic Laboratory.

Honorable Mention to Thomas D. Dublin, National Health Council, New York, for the exhibit on Healthy Communities Don't Just Happen.

Honorable Mention to George N. Papanicolaou, J. E. Seybolt, W. A. Cooper, L. W. Hanlon, and Irene Koprowska, New York, for the exhibit on Cytology of Cancer.

Honorable Mention to Elmer H. Loughlin, Aurele A. Joseph, and Irving Rappaport with Hodelin René, Institute of Inter-American Affairs, Port-au-Prince, Haiti, on Yaws Control with Antibiotics.

Section on Radiology.—Certificate of Merit to Edwin C. Ernst, Barnard Free Skin and Cancer Hospital, St. Louis, for the exhibit on Recent New Developments in the Application of Radium in the Treatment of Carcinoma of the Cervix.

Honorable Mention to Roger A. Harvey, John S. Laughlin, and Lewis L. Haas, University of Illinois College of Medicine, Chicago, for the exhibit on Medical Application of the Betatron.

Honorable Mention to Wallace S. Tirman, Harry W. Banker, and Charles B. Caylor, Bluffton, Ind., for the exhibit on Microradiography.

Honorable Mention to Walter S. Lusby, John W. Coltman, Richard L. Longini, and Fitz-Hugh B. Marshall, Westinghouse Electric Corporation, Baltimore, for the exhibit on Fluoroscopic Image Amplification.

Section on Surgery, General and Abdominal.—Certificate of Merit to H. E. Bacon, L. E. McCrea, H. D. Trimpi, C. C. Jackson, and I. Sauer, Temple University Hospital, Philadelphia, for the exhibit on Extended Radical Resection for Cancer of the Rectum; Pelvic Viscerectomy with Cutaneous Ureterostomy.

Honorable Mention to Julian B. Herrmann, Montefiore Hospital, New York, for the exhibit on The Effect of Hormonal Imbalance on Advanced Mammary Carcinoma.

Honorable Mention to Richard B. Cattell and Kenneth W. Warren, The Lahey Clinic, Boston, for the exhibit on Surgical Diseases of the Pancreas.

Section on Urology.—Certificate of Merit to M. Leopold Brodny and Samuel A. Robins, Beth Israel Hospital, Tufts College Medical School, Boston, for the exhibit on Prostatography.

Honorable Mention to R. H. Flocks, R. G. Bunge, J. S. Greenleaf, W. N. Harness, J. M. Tudor, and L. J. Prendergast, University Hospital, Iowa City, for the exhibit on Carcinoma of the Prostate.

Section on Miscellaneous Topics.—Certificate of Merit to A. Reynolds Crane, 200th Anniversary Committee, Pennsylvania Hospital, Philadelphia, for the exhibit on Pennsylvania Hospital—200th Anniversary of the Nation's First Hospital.

Honorable Mention to Major General Harry G. Armstrong, USAF (MC) Surgeon General, Department of the Air Force, Washington, D. C., for the exhibit on The Emergency Medical Crash Services (Featuring the New Mobile Ward Crash Cart).

The Committee on Awards recommends that recognition be given to the following groups for their efforts in presenting valuable clinical demonstrations on (1) fractures, (2) overweight, nutrition, and health, (3) pathology, (4) diabetes, and (5) noise in industry: Exhibit Committee on Fractures, Dr. Kellogg Speed, Chicago, Chairman; Exhibit Committee on Overweight, Nutrition and Health, Dr. James R. Wilson, Chicago, Chairman; Exhibit Committee on Diabetes, Dr. Howard F. Root, Boston, Chairman; Exhibit Committee on Pathology Specimens, Dr. William P. Belk, Philadelphia, Chairman, and Council on Industrial Health and Council on Physical Medicine and Rehabilitation of the American Medical Association, Chicago, together with the Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology and the Acoustical Society of America.

The Committee on Awards was greatly impressed with the excellence of the motion picture program.

Respectfully submitted,

O. P. J. Falk, M.D., St. Louis, Mo., Chairman.
Keith S. Grimson, M.D., Durham, N. C.
Paul H. Holinger, M.D., Chicago.
Leonard A. Scheele, M.D., Washington, D. C.
W. Walter Wasson, M.D., Denver.

MINUTES OF THE SCIENTIFIC SECTIONS

SECTION ON ANESTHESIOLOGY

Wednesday, June 13—Morning

The meeting was called to order at 9 o'clock by the chairman, Dr. H. Boyd Stewart, Tulsa, Okla.

Drs. Robert D. Dripps and Leroy D. Vandam, Philadelphia, presented a paper on "The Hazards of Lumbar Puncture," which was discussed by Drs. Frank Cole, Lincoln, Neb., and Urban H. Eversole, Boston.

The following papers were read as a symposium on "Plasma Volume Expanders in the Treatment of Shock":

Dr. Jesse L. Bollman, Rochester, Minn.: "Volemic Substances for the Maintenance of Plasma Volume After Blood Loss."

Dr. Frank W. Hartman, Detroit: "Tissue Changes Following the Use of Plasma Substitutes."

Dr. Walter L. Bloom, Emory University, Ga.: "Present Status of Plasma Volume Expanders in the Treatment of Shock: Clinical Laboratory Studies."

Drs. Winchell McK. Craig, Howard K. Gray and John S. Lundy, Rochester, Minn.: "Present Status of Plasma Volume Expanders in the Treatment of Shock: Clinical Results in Surgery."

These four papers were discussed by Drs. I. S. Ravdin, Philadelphia; Edwin J. Pulaski, San Antonio, Texas; Donald E. Hale, Cleveland; Lloyd R. Newhouser, Washington, D. C.; Everett I. Evans, Richmond, Va.; Douglas B. Kendrick Jr., Washington, D. C.; Frederick M. Allen, New York, and John Scudder, New York.

Thursday, June 14—Morning

The following officers were elected: chairman, Dr. Stevens J. Martin, Hartford, Conn.; vice chairman, Dr. Mary M. Lyons, Ravinia, Ill., and representative to the Scientific Exhibit, Dr. Scott M. Smith, Salt Lake City. Drs. Stewart C. Cullen, Iowa City; Perry P. Volpitto, Augusta, Ga., and Stevens J. Martin, Hartford, Conn., were elected members of the American Board of Anesthesiology.

Dr. R. J. Whitacre, East Cleveland, Ohio, presented a report from the American Board of Anesthesiology.

Dr. Edward B. Tuohy, Washington, D. C., in the absence of the delegate, Dr. Ruth, gave a brief report of the activities being considered by the House of Delegates.

On motion of Dr. Moses H. Krakow, New York, seconded by Dr. Edward B. Tuohy, Washington, D. C., it was voted that the question of asking the American Medical Association to provide ballot forms for election of section officers be referred to the executive committee for decision and action.

Drs. F. Paul Ansbro, Francis S. Latteri and Benson Bodell, Brooklyn, presented a paper on "Continuous Lumbar Epidural Block: The Answer to Spinal Anesthesia Complications." This paper was discussed by Drs. Robert A. Hingson, Baltimore, and Edward B. Tuohy, Washington, D. C.

Dr. Carl S. Hellijas, Hartford, Conn., read a paper, "Preoperative and Postoperative Respiratory Studies," which was discussed by Drs. Irving M. Pallin and Barnett A. Greene, Brooklyn.

Dr. Roger W. Ridley, Rochester, Minn., read a paper, "Studies of the Minute Volume Respiration During Anesthesia," which was discussed by Dr. Edward T. Lawless, Bloomfield, N. J.

With the vice chairman, Dr. Stevens J. Martin, presiding, Dr. H. Boyd Stewart, Tulsa, Okla., read the chairman's address, "Professional Obligations."

Drs. A. S. Keats, G. L. D'Allessandro and Henry K. Beecher, Boston, presented a paper, "A Controlled Study of the Treatment of Pain by Intravenous Procaine." This was discussed by Drs. Leo V. Hand, Boston, Raphael W. Robertazzi, Brooklyn, Frederick M. Allen, New York, and James E. Eckenhoff, Philadelphia.

Drs. V. K. Stoelting and J. P. Graf, Indianapolis, presented a paper on "Intravenous Propyl-Methyl-Carbingl Allyl Barbituric Acid for Hypnosis During Nitrous Oxide Anesthesia." This paper was discussed by Drs. R. J. Whitacre, East Cleveland, Ohio, and James E. Eckenhoff, Philadelphia.

Resuming the chair, the chairman read a resolution proposed by Dr. Henry S. Ruth, Haverford, Pa., section delegate, suggesting that the executive committees of the scientific sections through the section secretaries, respectfully request the Board of Trustees to allocate additional funds to each section sufficient to pay the expenses, in full or in part, of the section delegates to the meetings of the American Medical Association House of Delegates. It was moved by Dr. R. J. Whitacre, East Cleveland, Ohio, that authority be delegated to the executive committee to amend the resolution to proper form for presentation to the House of Delegates. The motion was regularly seconded and carried.

It was regularly moved, seconded and carried that a vote of thanks be extended to Dr. Scott M. Smith, Salt Lake City, for his excellent work with the Scientific Exhibit.

The chairman announced that a certificate of merit had been presented to Drs. Lloyd D. Seager and Edwin L. Rushia, Little Rock, Ark., for their scientific exhibit, and that honorable mention had been given to Dr. John G. P. Cleland, Oregon City, Ore., for his exhibit.

The newly elected officers were introduced.

FRIDAY, JUNE 15—MORNING

Joint Meeting with Section on Urology

The chairman of the Section on Urology, Dr. John Arthur Taylor, New York, read the chairman's address, "Prostatectomy in the Aged." The address was discussed by Drs. Moses H. Krakow, New York, Rubin Flocks, Iowa City, and Thomas D. Moore, Memphis, Tenn.

Drs. Stevens J. Martin and Thomas M. Feeney, Hartford, Conn., presented a paper, "Anesthesia in Pediatric Urology," which was discussed by Drs. Meredith F. Campbell, New York, and Margery Deming, Philadelphia.

Dr. Richard Chute, Boston, read a paper on "The Preoperative and Postoperative Management of Aged Patients Undergoing Urological Surgery with Particular Reference to Problems of Nutrition and Body Chemistry." This paper was discussed by Drs. C. Walter Metz, Denver; Elmer Belt, Los Angeles; Edward N. Cook, Rochester, Minn., and John Arthur Taylor, New York.

Drs. E. M. Papper and George F. Cahill, New York, presented a paper, "Anesthetic Problems in the Hormonal Disorders of the Adrenal Gland," which was discussed by Dr. Francis F. Foldes, Pittsburgh.

Dr. Elmer Hess, Erie, Pa., spoke briefly on the work of the American Medical Association.

Dr. Hugh J. Jewett, Baltimore, read a paper, "Infiltrating Carcinoma of the Bladder: Relation of Early Diagnosis to Five Year Survival Rate After Complete Extirpation." This paper was discussed by Drs. E. Joseph Delmonico, Syracuse, N. Y.; Edward N. Cook, Rochester, Minn., and Meyer M. Melicow, New York.

Drs. Lloyd H. Mousel and O. A. Nelson, Seattle, presented a paper, "Renal Tumors," which was discussed by Drs. Wyland F. Leadbetter, Boston; Henry S. Ruth, Haverford, Pa.; Richard Chute, Boston; Henry K. Sangree, Philadelphia, and Meyer M. Melicow, New York.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

WEDNESDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2:10 p. m. by the vice chairman, Dr. John Eric Dalton, Indianapolis.

Dr. Dalton gave a résumé of the career of the Chairman of the Section, Dr. Dudley C. Smith, who died shortly after his election in 1950.

Dr. James R. Webster, Chicago, read the report of the Committee on Scientific Exhibit and announced the awards for scientific exhibits.

In the absence of Dr. Clinton W. Lane, St. Louis, Dr. John G. Downing, Boston, was asked to serve as a member of the Executive Committee.

Dr. Anthony C. Cipollaro, New York, presented the report of the Nominating Committee.

Dr. John Eric Dalton, Indianapolis, read the chairman's address, "History, Problems and Costs of the Industrial Health Movement with Special Reference to the Dermatoses."

Drs. Robert R. Kierland, Paul A. O'Leary, Louis A. Brunsting and John W. Didcoct, Rochester, Minn., presented a paper on "The Use of Cortisone and ACTH in Dermatology."

Drs. Thomas H. Sternberg and Victor D. Newcomer, Los Angeles, presented a paper on "Treatment of Atopic Dermatitis with Cortisone."

These two papers were discussed by Drs. Ray O. Noojin, Birmingham, Ala.; Boynton H. Booth, Indianapolis; E. E. Barksdale, Washington, D. C.; Maurice J. Costello, New York; James R. Webster, Chicago; Robert R. Kierland, Rochester, Minn., and Thomas H. Sternberg, Los Angeles.

Dr. John G. Downing, Boston, presented a paper on "Cancer of the Skin and Occupational Trauma," which was discussed by Drs. George T. Pack, New York, and Frederick M. Allen, New York.

Dr. Walter C. Lobitz Jr., Hanover, N. H., presented a paper on "Pustular Syringitis: A Sweat Retention Phenomenon Complicating Common Dermatoses." This paper was discussed by Dr. Marion B. Sulzberger, New York.

Dr. William B. Guy, Pittsburgh, presented a paper on "Neurogenic Factors in Contact Dermatitis," which was discussed by Dr. Francis W. Lynch, St. Paul.

THURSDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr. Francis W. Lynch, St. Paul; vice chairman, Dr. E. Myles Standish, Hartford, Conn.; secretary, Dr. John H. Lamb, Oklahoma City; delegate, Dr. Everett C. Fox, Dallas, Texas; alternate, Dr. Leonard F. Weber, Chicago.

Dr. George M. Lewis, New York, presented a report on the American Board of Dermatology.

Dr. Herbert Rattner, Chicago, presented a report on the *Archives of Dermatology and Syphilology*.

Dr. Anthony C. Cipollaro, New York, brought up the matter of education in dermatology at the undergraduate level, which was discussed by Drs. Donald Pillsbury, Philadelphia; Harold N. Cole, Cleveland; Herbert Rattner, Chicago, and Clarence S. Livingood, Galveston, Texas.

On motion regularly made, seconded and carried, it was voted that the chairman of the section appoint a committee to bring in a resolution on the educational matter. Dr. Dalton appointed the following committee: Drs. George M. Lewis, New York; Harold N. Cole, Cleveland; Nelson P. Anderson, Los Angeles, and Anthony C. Cipollaro, New York.

Dr. Harold N. Cole, Cleveland, presented the Guest Lecture, entitled "Erasmus and His Diseases."

Drs. John G. Thomsen and John E. Rauschkolb, Cleveland, presented a paper on "Contact X-ray Therapy of the Common Wart." This paper was discussed by Drs. Frank J. Eichenlaub, Washington, D. C., and John E. Rauschkolb, Cleveland, Ohio.

Drs. Maurice Sullivan and Eugene Bereston, Baltimore, presented a paper on "A Study of Topical Therapy in Tinea Capitis." This paper was discussed by Drs. J. Lamar Callaway, Durham, N. C.; Jacob H. Swartz, Boston; J. Walter Wilson, Los Angeles; George M. Lewis, New York; Albert M. Kligman, Philadelphia; Conrad Stritzler, Jamaica, N. Y., and Eugene Bereston, Baltimore.

Drs. Roy L. Kile, Evelyn Rockwell and Jan Schwarz, Cincinnati, presented a paper on "The Use of Neomycin in Dermatology."

Drs. Clarence S. Livingood, Samchai, Nilasena, J. Fred Mullins and Rufus A. Stevenson, Galveston, Texas, presented a paper on "Pyogenic Infections Treated by Neomycin."

These two papers were discussed by Drs. J. Lowry Miller, New York; Roy L. Kile, Cincinnati; Maurice J. Costello, New York, and Clarence S. Livingood, Galveston, Texas.

Drs. Leslie Paxton Barker and Harry Van Velsor, New York, presented a paper on "Penicillin Treatment of Latent Syphilis: A Study of 110 Cases Previously Treated with Chemotherapy." This paper was discussed by Dr. Herman Beerman, Philadelphia, and Dr. Leslie P. Barker, New York.

FRIDAY, JUNE 15—AFTERNOON

The delegate to the House of Delegates, Dr. Everett C. Fox, Dallas, Texas, made a report on the activities of the House of Delegates.

Dr. Harold N. Cole read the resolution brought in by a special committee appointed on Thursday, and on motion regularly made, seconded and carried, the resolution was unanimously adopted, as follows:

WHEREAS, The American Medical Association is interested in well-trained general practitioners of medicine; and

WHEREAS, Dermatology and syphilology constitute a large segment of the practice of medicine as a whole; and

WHEREAS, Eight per cent of all admissions to military hospitals during World War II were dermatological patients; and

WHEREAS, Twelve to fifteen per cent of all questions in Queries and Minor Notes in The Journal of the American Medical Association pertain to dermatology and syphilology; and

WHEREAS, It has come to the attention of this section that there is a wide disparity in regard to the allotment of time devoted to the teaching of dermatology and syphilology, verging almost to complete neglect in some medical colleges; therefore be it

Resolved, That the Section on Dermatology and Syphilology of the American Medical Association deplores the deficient teaching programs of dermatology and syphilology of some medical schools; and be it further

Resolved, That this resolution be brought to the attention of the Board of Trustees of the American Medical Association, of the Council on Medical Education and Hospitals and of the Special Committee on Medical Education.

Dr. Frances Pascher, Brooklyn, presented a paper on "Sternal Marrow Findings in Selected Dermatoses," which was discussed by Drs. Edward P. Cawley, Charlottesville, Va., and Dr. Pascher.

Drs. J. B. Howell, Dallas, Texas, J. Walter Wilson, Los Angeles, and Marcus R. Caro, Chicago, presented a paper on "Tinea Capitis Caused by Trichophyton Tonsurans (Sulfureum or Crateriforme)." This paper was discussed by Drs. Royal M. Montgomery, New York; Everett R. Seale, Houston, Texas, and Walter Wilson, Los Angeles.

Drs. Jeff Davis and George T. Pack, New York, presented a paper on "Erythema Multiforme Following Deep X-Ray Therapy," which was discussed by Drs. Robert N. Buchanan Jr., Nashville, Tenn., and Jeff Davis, New York.

Dr. Isadore I. Fisher, Minneapolis, presented a paper on "Pemphigus Vulgaris: A Clinical and Laboratory Study." This paper was discussed by Drs. Maurice J. Costello, New York, and Isadore I. Fisher, Minneapolis.

Dr. Harold G. Ravitz, St. Paul, presented a paper on "Treatment of Superficial Dermatomycoses with Asterol Dihydrochloride." This paper was discussed by Drs. Jacob H. Swartz, Boston; Bernard Appel, Lynn, Mass.; Robert N. Buchanan Jr., Nashville, Tenn.; Edmond K. Edelson, Newark, N. J.; Everett R. Seale, Houston, Texas, and Harold G. Ravitz, St. Paul.

Dr. Coleman Mopper, Hamtramck, Mich., presented a paper on "Primary Fibrosarcoma of the Skin," which was discussed by Drs. G. W. Binkley, Cleveland; Jeff Davis, New York, and Dr. Mopper.

SECTION ON DISEASES OF THE CHEST

WEDNESDAY, JUNE 13—AFTERNOON

The meeting was called to order by the chairman, Dr. Alvis E. Greer, Houston, Texas.

Dr. Alvis E. Greer presented the chairman's address: "The Evolution of Medicine."

Drs. Hyman E. Bass, David Greenberg, Milton A. Miller and Emanuel Singer, New York, presented a paper on "Pulmonary Changes in Uremia." This paper was discussed by Dr. Esmond R. Long, Philadelphia, and Dr. Hyman E. Bass, New York.

Drs. J. W. Nixon and J. F. Perry, San Antonio, presented a paper on "Modern Trends in the Diagnosis and Treatment of Pulmonary Disease," which was discussed by Dr. Moses J. Stone, Boston, and Dr. Nixon.

Drs. Milton W. Anderson, John R. Kelsey Jr., and Jesse E. Edwards, Rochester, Minn., presented a paper on "Clinical and Pathological Considerations in Patients with Calcific Aortic Stenosis." This paper was discussed by Dr. John F. Briggs, St. Paul, and Dr. Milton W. Anderson, Rochester, Minn.

Dr. O. A. Sander, Milwaukee, read a paper on "Chronic Berylliosis."

Drs. Ralph Horton, Oneonta, N. Y.; Evelyn F. H. Rogers, Utica, N. Y., and Robert F. Korns, Albany, N. Y., presented a paper on "Epidemic of Tuberculosis in a High School." This paper was discussed by Dr. F. M. Pottenger, Monrovia, Calif.

Drs. Herbert C. Sweet and Paul Murphy, St. Louis, presented a paper on "The Evaluation of Therapy in Pulmonary Emphysema," which was discussed by Dr. Leon H. Hirsch, Milwaukee.

Drs. Michael E. DeBakey, Houston, Texas, and Alton Ochsner, Paul T. DeCamp and C. J. Ray, New Orleans, presented a paper on "Bronchogenic Carcinoma with Particular Emphasis on Its Incidence and Early Manifestations." This paper was discussed by Dr. John F. Briggs, St. Paul, and Dr. Michael E. DeBakey, Houston, Texas.

THURSDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr. J. Winthrop Peabody, Washington, D. C.; vice chairman, Dr. Joseph C. Placak, Cleveland; delegate, Dr. Hollis E. Johnson, Nashville, Tenn.; alternate, Dr. Edward Hayes, Monrovia, Calif. The secretary, Dr. Jay A. Myers, Minneapolis, continues for another year.

Drs. Burgess Gordon, Hurley L. Motley and Peter A. Theodos, Philadelphia, presented a paper on "The Use of Intermittent Positive Pressure Breathing and Streptomycin in the Management of Chronic Pulmonary Tuberculosis Complicating Silicosis." This paper was discussed by Dr. Edwin R. Levine, Chicago, and Dr. Burgess Gordon, Philadelphia.

Dr. Robert J. Anderson, Washington, D. C., read a paper on "Community-Wide X-Ray Surveys in Big Cities," which was discussed by Drs. Otto L. Bettag, Chicago; Frank J. Hill, Minneapolis, and Robert J. Anderson, Washington, D. C.

Dr. Herman J. Moersch, Rochester, Minn., read a paper on "The Significance of Hemoptysis," which was discussed by Drs. Porter P. Vinson, Richmond, Va., and Henry Scheer, New York.

Dr. Andrew L. Banyai, Milwaukee, read a paper on "The Management of Cough in Daily Practice."

Drs. Abraham Falk, and W. T. Tucker, Minneapolis, read a paper on "Clinical Implications of Idiopathic Pleural Effusions." This paper was discussed by Drs. Lee Ogden, New York, and W. T. Tucker, Minneapolis.

Dr. Daniel J. Glomset, Des Moines, Iowa, read a paper on "Cardiac Conduction," which was discussed by Dr. A. E. Jaffin, Jersey City, N. J., and Dr. Glomset.

FRIDAY, JUNE 15—AFTERNOON

Dr. William S. Schwartz, Oteen, N. C., read a paper on "Recent Drug Therapy in Diseases of the Chest," which was discussed by Drs. Harold L. Israel, Philadelphia, and William S. Schwartz, Oteen, N. C.

Dr. John F. Briggs, St. Paul, read a paper on "The Diagnosis and Treatment of Coronary Heart Disease." This paper was discussed by Drs. Harry Golston, Hartford, Conn.; Benjamin Miller, Baltimore, and John F. Briggs, St. Paul.

Dr. Philip Thorek, Chicago, read a paper on "Modern Diagnosis and Treatment of Esophageal Diseases," which was discussed by Drs. John F. Briggs, St. Paul, and Philip Thorek, Chicago.

Dr. Hobart A. Reimann, Philadelphia, read a paper on "The Differential Diagnosis of the Pneumonias."

SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

WEDNESDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2:05 p. m. by the chairman, Dr. James A. Greene, Houston, Texas.

The following papers were read as a symposium on "Liver Disease."

Drs. Joseph Stokes Jr., Miles E. Drake and John Farquhar, Philadelphia, and Mercer C. Blanchard, Columbus, Ga.: "Further Studies on the Epidemiology of Viral Hepatitis." This paper was discussed by Drs. W. P. Havens, Philadelphia, and Richard B. Capps, Chicago.

Drs. Victor M. Sborov and Theodore C. Keller, Washington, D. C.: "The Diagnosis of Hepatitis." This paper was discussed by Drs. Hans L. Popper and Richard B. Capps, Chicago.

Dr. John R. Neefe, Philadelphia: "Current Concepts of Treatment of Hepatitis." This paper was discussed by Drs. Franklin M. Hanger, New York, and F. J. Ingelfinger, Boston.

Dr. Henry G. Kunkel, New York: "The Fate of the Patient with Hepatitis." This paper was discussed by Dr. Joseph Post, New York.

Drs. J. T. Sessions Jr., Boston; J. C. Bullard, Framingham, Mass., and F. J. Ingelfinger, Boston: "The Effect of Barbiturates in Patients with Liver Disease." This paper was discussed by Drs. Jesse L. Bollman, Rochester, Minn.; E. M. Papper, New York, and James A. Greene, Houston, Texas.

Drs. Theodore B. Van Itallie and Frederick J. Stare, Boston: "The Clinical Use of Fat Injected Intravenously." This paper was discussed by Drs. Robert Elman, St. Louis; Jonathan E. Rhoads, Philadelphia, and Laurance W. Kinsell, Oakland, Calif.

THURSDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr. Carl V. Moore, St. Louis; vice chairman, Dr. Maurice H. Seevers, Ann Arbor, Mich.; secretary, Dr. Hugh R. Butt, Rochester, Minn.; delegate, Dr. Edgar V. Allen, Rochester, Minn.; alternate, Dr. Charles M. Gruber, Philadelphia; representative to the Scientific Exhibit, Dr. Robert W. Wilkins, Boston.

Dr. James A. Greene, Houston, Texas, presented the chairman's address on "Pituitary Dwarfism, a Therapeutic Dilemma."

Dr. William B. Castle, Boston, presented the Minot Lecture: "The Contributions of George Richards Minot to Experimental Medicine."

Drs. Ernest Yount, Marvin Rosenblum, and Robert L. McMillan, Winston-Salem, N. C., presented a paper on "Therapeutic Use of Quinidine: The Value of Blood Levels in Treatment." This paper was discussed by Drs. J. Edwin Wood Jr., Charlottesville, Va., and Harold Feil, Cleveland.

Dr. Marsh H. McCall, Samuel Musallam and Guillermo Porras, New York, prsented a paper on "Anticoagulant Therapy in Acute Myocardial Infarction," which was discussed by Drs. Nelson W. Barker, Rochester, Minn.; George C. Griffith, Pasadena, Calif.; Samuel Baer, Philadelphia, and E. S. Nichol, Miami.

Drs. Nelson W. Barker, Hugh H. Hanson, and Frank D. Mann, Rochester, Minn., presented a paper on "Comparative Effects of the Anticoagulants Dicumarol, Tromexan and 4-Hydroxy-Coumarin Anticoagulant 63." This paper was discussed by Drs. Shepard Shapiro, New York, and Charles Brambel, Baltimore.

Drs. Harrison F. Flippin and William P. Boger Jr., Philadelphia, presented a paper on "Present Day Treatment of Pneumonia," which was discussed by Dr. John Staige Davis, New York.

FRIDAY, JUNE 15—MORNING

A joint meeting was held with the Section on Internal Medicine. The proceedings are reported in the minutes of that section.

SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

WEDNESDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Frank G. Runyeon, Reading, Pa.

Dr. Benjamin M. Bernstein, Brooklyn, read a paper entitled "Acidity: Is It Related to Ulcer Syndrome?" This paper was discussed by Dr. Hyman I. Goldstein, Camden, N. J.

A paper entitled "Banthine: Clinical Evaluation in Gastro-Enterology," by Dr. Gordon McHardy, New Orleans, was presented and was discussed by Dr. Asher Winkelstein, New York; Dr. Cecil O. Patterson, Dallas, Texas; Dr. William P. Chapman, Boston; Dr. Henry A. Rafsky, New York; Dr. Erwin Levin, Chicago; Dr. Keith S. Grimson, Durham, N. C.; Dr. Benjamin M. Bernstein, New York, and Dr. Gordon McHardy, New Orleans.

Dr. Moses Paulson, Baltimore, read a paper entitled "Syndrome Following Total Gastrectomy," which was discussed by Dr. Dwight L. Wilbur, San Francisco; Dr. Thomas E. Machella, Philadelphia, and Dr. Moses Paulson, Baltimore.

Dr. Clifford J. Barborka, Chicago, presented a paper on the "Present Status of the Obesity Problem." This paper was discussed by Dr. James S. McLester, Birmingham, Ala.; Dr. Bruce Kenamore, St. Louis, and Dr. Clifford J. Barborka, Chicago.

A paper entitled "Gastric Polyps" was presented by Drs. Harry Yarnis and Richard H. Marshak, New York, and Dr. A. I. Friedman, Hackensack, N. J., and was discussed by Dr. James B. Carey, Minneapolis; Dr. Saul A. Schwartz, New York, and Dr. A. I. Friedman, Hackensack, N. J.

Drs. Max Ritvo, Norman Zamcheck, Melvin P. Osborne, Franklin W. White,* and Thomas C. Chalmers, Boston, and Max G. Carter, New Haven, Conn., presented a paper entitled "Early Diagnosis in Massive Upper Gastrointestinal Hemorrhage." This paper was discussed by Dr. A. H. Aaron, Buffalo; Dr. Fred E. Templeton, Seattle; Dr. Hyman I. Goldstein, Camden, N. J.; Dr. John T. Howard, Baltimore, and Dr. Norman Zamcheck, Boston.

THURSDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr. Grant H. Laing, Chicago; vice chairman, Dr. Louis E. Moon, Omaha; secretary, Dr. Donovan C. Browne, New Orleans; chairman, section committee on scientific exhibits, Dr. Everett D. Kiefer, Boston, and co-chairman, Dr. J. P. Nesselrod, Evanston, Ill.; representative to American Board of Proctology, Dr. Robert A. Scarborough, San Francisco.

Dr. A. H. Aaron, Buffalo, representative to the American Board of Gastro-Enterology, made his report, and Dr. Robert A. Scarborough, representative to the American Board of Proctology, gave a report.

A paper entitled "Adenomas of the Colon and Rectum" by Drs. George E. Binkley and Douglas A. Sunderland, New York, was presented, and was discussed by Drs. Harry E. Bacon, Philadelphia, and Robert A. Scarborough, San Francisco.

Drs. Sidney A. Portis and Joseph C. King, Chicago, presented a paper entitled "The Gastrointestinal Tract in the Aging." This paper was discussed by Drs. Martin S. Kleckner, Allentown, Pa.; Henry A. Rafsky, New York; Anthony Bassler, New York, and Sidney A. Portis, Chicago.

Dr. Frank G. Runyeon, Reading, Pa., read the chairman's address, entitled "Sigmoidoscopy: Its Clinical Importance to the Practitioner."

A paper entitled "ACTH in the Treatment of Ulcerative Colitis" was presented by Drs. Seymour J. Gray, Robert W. Reifenstein, J. C. Gordon Young, John A. Benson Jr., and Kenneth Sterling, Boston, and was discussed by Drs. J. Arnold Bargen, Rochester, Minn., and Franz J. Ingelfinger, Everett D. Kiefer and Seymour J. Gray, Boston.

A paper entitled "Multiple Polyposis: Results of Fulguration of Polyps in the Distal Portion of the Colon After Ileosigmoidostomy and Colectomy," was presented by Drs. Newton D. Smith and John R. Hill, Rochester, Minn. This paper was discussed by Dr. Garnet W. Ault, Washington, D. C.; Dr. Stuart T. Ross, Hempstead, N. Y., and Dr. Newton D. Smith, Rochester, Minn.

Drs. Maurice Feldman and Tobias Weinberg, Baltimore, presented a paper entitled "Aberrant Pancreas, a Cause of Duodenal Syndrome," which was discussed by Dr. Russell S. Boles, Philadelphia; Dr. Sara M. Jordan, Boston, and Dr. Maurice Feldman, Baltimore.

FRIDAY, JUNE 15—MORNING

A joint meeting was held with the Section on Pathology and Physiology. The proceedings are reported in the minutes of that section.

SECTION ON GENERAL PRACTICE

WEDNESDAY, JUNE 13—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Lester D. Bibler, Indianapolis.

Dr. Lester D. Bibler, Indianapolis, presented the "Chairman's Address."

Dr. David I. Macht, Baltimore, read a paper on "Influence of Some Medicinal and Emotional Factors on Blood Coagulation," which was discussed by Drs. Geza de Takats, Chicago, and David I. Macht, Baltimore.

Dr. Claude S. Beck, Cleveland, read a paper on "Operation for Coronary Artery Disease," which was discussed by Drs. George D. Geckeler, Philadelphia; N. A. Antonius, Newark, N. J.; Charles P. Bailey, Philadelphia; Harold Feil, Cleveland; Egmont J. Orbach, New Britain, Conn., and Claude S. Beck, Cleveland.

* Deceased.

Dr. Russell S. Boles, Philadelphia, read a paper on "The Responsibility of the Physician to His Patient," which was discussed by Dr. Thomas E. Robinson, Salt Lake City.

Dr. Thomas E. Rardin, Columbus, Ohio, read a paper on "Psychosomatic Highlights."

Dr. William A. Schonfeld, New York, read a paper on "The General Practitioner's Role in the Management of Personality Problems of the Adolescent." This paper was discussed by Drs. Camille K. Cayley, New York; Herbert F. Robb, Belleville, Mich., and William A. Schonfeld, New York.

Thursday, June 14—Morning

The following officers were elected: chairman, Dr. Thomas E. Robinson, Salt Lake City; vice chairman, Dr. Richard A. Mills, Fort Lauderdale, Fla.; secretary, Dr. Eugene Baumgartner, Oakland, Md.; chairman, scientific exhibit, Dr. Charles E. McArthur, Olympia, Wash.

On motion of Dr. Thomas E. Robinson, Salt Lake City, seconded by Dr. Milton B. Casebolt, Kansas City, Mo., the following resolution was passed:

A RESOLUTION TO THE BOARD OF TRUSTEES FROM THE SECTION ON GENERAL PRACTICE

Whereas, The Board of Trustees in its respected and judicious decision created a Section on General Practice; and

Whereas, This section fills a long needed place for the free exchange of information among all men in all branches of medicine; and

Whereas, A large proportion of the industrial and accidental work is done by the general practitioner; now therefore be it

Resolved, That we as a section petition and ask that the Board of Trustees of the American Medical Association place a member of the Section on General Practice on the Council on Industrial Health.

Dr. William B. Norment, Greensboro, N. C., read a paper on "Diagnosis and Treatment of Pathology of the Uterine Canal with the Lens Hysteroscope."

Dr. Edward A. Schumann, Philadelphia, read a paper on "Obstetric Hemorrhage," which was discussed by Drs. Daniel H. Hiebert, Provincetown, Mass.; Ellis M. Markell, Harrison, N. Y., and Edward A. Schumann, Philadelphia.

Dr. Daniel B. Dorman, Pittsfield, Mass., read a paper on "The Management of the Abnormal Presentation During the Second Stage of Labor," which was discussed by Drs. J. Edward Lynch and Milton L. McCall, Philadelphia, and Daniel B. Dorman, Pittsfield, Mass.

Drs. F. Bayard Carter, Violet H. Turner, Clarence C. Davis and Edwin C. Hamblen, Durham, N. C., presented a paper on "Comparison of Previous Operations and Initial Pathology in Five Hundred Childless Couples." This paper was discussed by Drs. M. Edward Davis, Chicago; Fred A. Simmons, Boston, and Clarence C. Davis, Durham, N. C.

Dr. U. R. Bryner, Salt Lake City, read a paper on "An Evaluation of Socialized Medicine in Great Britain as Seen by a Member of the American Medical Association Committee." This was discussed by Drs. Morgan D. Person, Allentown, Pa., and U. R. Bryner, Salt Lake City.

Friday, June 15—Morning

Dr. Robert Turell, New York, read a paper on "Proctology and the General Practitioner," which was discussed by Drs. A. A. Gladstone, Burlington, Vt.; F. H. Redewill, San Francisco; Richard I. Barstow, Norfolk, Conn., and Robert Turell, New York.

Dr. Milton B. Casebolt, Kansas City, Mo., read a paper on "Geriatrics: A Challenge to the General Practitioner."

Dr. F. H. Redewill, San Francisco, read a paper on "Biological Warfare."

Dr. W. J. Merle Scott, Rochester, N. Y., read a paper on "Clinical Results of Treatment by Aero-Pulse Principle in Postphlebitis and Varicose Venous Stasis." This paper was discussed by Drs. William F. Clark, Rochester, N. Y.; Thomas E. Robinson, Salt Lake City; Leo M. Boden, East Aurora, N. Y.; R. M. Cunningham, Baltimore, Md., and W. J. Merle Scott, Rochester, N. Y.

Dr. Burech Rachlis, Philadelphia, read a paper on "Vertigo," which was discussed by Drs. Matthew S. Ersner, Michael Scott and Burech Rachlis, Philadelphia.

Dr. Benjamin F. Byrd, Nashville, Tenn., read a paper on "The Fatal Pause in Diagnosis of Neoplastic Disease in the Physician Patient." This paper was discussed by Drs. James C. Kimbrough, Washington, D. C.; Richard M. Taliafero, Greensboro, N. C., and Benjamin F. Byrd, Nashville, Tenn.

SECTION ON INTERNAL MEDICINE

Wednesday, June 13—Morning

The meeting was called to order at 9 o'clock by the chairman, Dr. Walter L. Palmer, Chicago.

Drs. Charles C. Wolferth, William A. Jeffers, Francis D. W. Lukens, Harold A. Zintel and Joseph H. Hafkenschiel, Philadelphia, presented a paper on "Subtotal Adrenalectomy in the Treatment of Arterial Hypertension." This paper was discussed by Drs. D. M. Green, Chicago, and Reginald H. Smithwick, Boston.

Drs. Thomas P. Lyon, John W. Gofman, Frank Lindgren and Hardin Jones, Berkeley, Calif., presented a paper on "Further Studies of the Relationship of Lipoproteins to Atherosclerosis." This paper was discussed by Drs. Louis N. Katz, Chicago, and W. C. Hueper, Bethesda, Md.

Dr. N. C. Gilbert, Chicago, delivered the Billings Lecture: "A History of the Treatment of Coronary Heart Disease."

Dr. Robert L. Levy, New York, presented a paper on "Needless Restrictions Imposed on Cardiac Patients," which was discussed by Drs. Henry A. Christian, Brookline, Mass.; John J. Sampson, San Francisco, and Hyman I. Goldstein, Camden, N. J.

Drs. Arthur M. Master and Harry L. Jaffe, New York, presented a paper on "Complete Functional Recovery from Acute Coronary Occlusion and Insufficiency." This paper was discussed by Drs. George C. Griffith, Pasadena, Calif.; A. Carlton Ernstene, Cleveland, and Hyman I. Goldstein, Camden, N. J.

Drs. J. Edwin Wood Jr., Donald H. Ferguson and Preston B. Lowrance, Charlottesville, Va., presented a paper on "Cation Exchange Resins as an Adjunct in the Treatment of Heart Failure." This paper was discussed by Drs. Edward S. Orgain, Durham, N. C., and J. Russell Elkinton, Philadelphia.

Dr. Fay A. LeFevre, Cleveland, presented a paper on "The Management of Occlusive Arterial Disease of the Extremities," which was discussed by Drs. Robert W. Wilkins, Boston; Milton Mendlowitz, New York; William S. Collens, Brooklyn, and Benjamin Jablons, New York.

Thursday, June 14—Morning

The following officers were elected: chairman, Dr. Carter Smith, Atlanta, Ga.; vice chairman, Dr. Truman G. Schnabel, Philadelphia; secretary, Dr. Herrman L. Blumgart, Boston; delegate, Dr. Charles T. Stone, Galveston, Texas; alternate, Dr. William D. Stroud, Philadelphia.

Drs. Paul S. Rhoads, Carl E. Billings and Vincent J. O'Conor, Chicago, presented a paper on "Problems in the Management of Urinary Tract Infections," which was discussed by Drs. Ernest E. Irons, Chicago, and Edward N. Cook, Rochester, Minn.

Dr. Emanuel Schwartz, Brooklyn, presented a paper on "Oral Cortisone in Intractable Bronchial Asthma," which was discussed by Drs. Carl E. Arbesman, Buffalo, and Theron G. Randolph and Walter L. Palmer, Chicago.

Dr. Walter L. Palmer, Chicago, Ill., presented the chairman's address on "Medical and Social Aspects of Problems of Population."

Drs. Lawrence E. Hinkle Jr., and Stewart G. Wolf Jr., New York, presented a paper on "The Importance of Life Stress in the Course and Management of Diabetes Mellitus." This paper was discussed by Drs. Edward Tolstoi, New York, and Garfield G. Duncan, Philadelphia.

Dr. Marc J. Musser, Madison, Wis., presented a paper on "Some Factors in the Early Diagnosis of Emotionally Conditioned Illness," which was discussed by Drs. Grete L. Bibring, Boston; Edward Weiss, Philadelphia, and Eugene Ziskind, Los Angeles.

FRIDAY, JUNE 15—MORNING

Joint Meeting with Section on Experimental Medicine and Therapeutics

The joint meeting was called to order at 9 o'clock by the chairman of the Section on Experimental Medicine and Therapeutics, Dr. James A. Greene, Houston, Texas.

All of the papers read at this joint meeting were presented as a "Symposium on Arteriosclerosis and Hypertension."

Dr. Herbert Chasis, New York, presented a paper on "Pathogenesis of Hypertension," which was discussed by Dr. Stanley E. Bradley, New York.

Dr. Louis N. Katz, Chicago, presented a paper on "Newer Approaches to the Pathogenesis of Atherosclerosis."

Dr. William B. Wartman, Chicago, presented a paper on "The Pathology of Arteriosclerosis." This paper was discussed by Drs. H. T. Blumenthal, St. Louis, and L. L. Waters, New Haven, Conn.

Dr. Ancel Keys, Minneapolis; presented a paper on "Cholesterol, Giant Molecules and Atherosclerosis," which was discussed by Dr. Irvine H. Page, Cleveland.

Drs. Howard Burchell, E. V. Allen and F. P. Moersch, Rochester, Minn., presented a paper on "The Clinical Manifestations of Arteriosclerosis." This paper was discussed by Drs. Francis M. Forster, Washington, D. C.; Francis C. Wood, Philadelphia, and Louis N. Katz, Chicago.

Dr. Irvine H. Page, Cleveland, presented a paper on "Current Treatment of Hypertension," which was discussed by Drs. Robbert W. Wilkins, Boston; Frederick M. Allen, New York, and Herbert Chasis, New York.

SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

WEDNESDAY, JUNE 13—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. J. Milton Robb, Detroit.

Drs. Edmund P. Fowler and Adolf Zeckel, New York, presented a paper on "Psychosomatic Aspects of Ménière's Disease." This paper was discussed by Drs. Adolf Zeckel, New York, and Norton Canfield, New Haven, Conn.

Drs. Francis H. McGovern, Danville, Va., and G. Slaughter Fitz-Hugh, Charlottesville, Va., presented a paper on "Herpes Zoster of the Cephalic Extremity." On motion of Dr. Edmund P. Fowler, seconded by Dr. Norton Canfield, New Haven, Conn., it was voted to allow Dr. William C. Thornell, Cincinnati, to read the discussion of this paper, prepared by Dr. Kurt Tschiassny, Cincinnati, who was unable to be present.

Dr. Marvin F. Jones, New York, presented a paper on "Allergy of the Upper Respiratory Tract: Its Cure by Surgery Plus Antiallergic Methods." This paper was discussed by Drs. Irving W. Voorhees and L. L. Coleman, New York; Sacks Bricker, Philadelphia, and Henry M. Scheer, New York.

Drs. Frederick R. Guilford, Houston, Texas, and C. O. Haug, Galveston, Texas, presented a paper on "The Diagnosis of Deafness in the Very Young Child Aided by the Use of a New Instrument, the Pediacoumeter." This paper was discussed by Drs. Edmund P. Fowler, New York; Stanley Macht, Hagerstown, Md.; Sam H. Sanders, Memphis, Tenn., and Frederick R. Guilford, Houston, Texas.

Dr. Raymond E. Jordan, Pittsburgh, presented a paper on "The Role of Allergy in Otology," which was discussed by Drs. Erhart Ruedemann, Pittsburgh; Francis Davison, Danville, Pa., and Raymond E. Jordan, Pittsburgh.

THURSDAY, JUNE 14—MORNING

Dr. Gordon F. Harkness, Davenport, Iowa, gave his report as delegate to the House of Delegates.

The following officers were elected: chairman, Dr. Carl H. McCaskey, Indianapolis; vice chairman, Dr. Fred W. Dixon, Cleveland; secretary, Dr. Sam H. Sanders, Memphis, Tenn.; representative to the Scientific Exhibit, Dr. Francis W. Davison, Danville, Pa., and representative to the American College of Surgeons, Dr. Louis H. Clerf, Philadelphia.

Dr. O. E. Hallberg, Rochester, Minn., presented a paper on "Nosebleed and Its Treatment," which was discussed by Drs. D. H. Anthony, Memphis, Tenn.; William C. Thornell, Cincinnati; Hyman I. Goldstein, Camden, N. J.; Joseph I. Kemler, Baltimore; John J. Rainey, Troy, N. Y.; Ernest Reeves, Passaic, N. J., and O. E. Hallberg, Rochester, Minn.

Dr. De Graaf Woodman, New York, presented a paper on "Congenital Atresia of the Auditory Canal," which was discussed by Drs. George L. Pattee, Denver; Edgar M. Holmes, Boston; Frederick R. Guilford, Houston, Texas, and De Graaf Woodman, New York.

Dr. J. Milton Robb, Detroit, read his chairman's address, "Are You an Otolaryngologist?"

Dr. J. Mathews Robison, Houston, Texas, presented a paper on "Pressure Treatment of Maxillary Sinusitis." This paper was discussed by Dr. George S. McReynolds, Galveston, Texas.

The chairman, Dr. J. Milton Robb, read a report from the American Board of Otolaryngology.

FRIDAY, JUNE 15—MORNING

Dr. Daniel C. Moore, Seattle, presented a paper on "A Technic of Anesthesia for Long and/or Technically Difficult Ophthalmologic and Otolaryngologic Surgical Procedures." This paper was discussed by Drs. Paul B. MacCready, New Haven, Conn.; P. L. Munday, Camp Carson, Colo.; Joseph I. Kemler, Baltimore, Md.; Frank D. Lathrop, Boston; James B. Costen, St. Louis; Henry M. Scheer, New York, and Daniel C. Moore, Seattle.

Dr. Gabriel F. Tucker, Philadelphia, presented a paper on "Diagnosis and Treatment of Cancer of the Larynx: Methods of Cure: Median Thyrotomy, Laryngectomy, Irradiation and Irradiation with Surgery." This paper was discussed by Drs. Edwin N. Broyles, Baltimore; Murdock S. Equen, Atlanta, Ga.; Joseph I. Kemler, Baltimore; Frederick M. Allen, New York; Henry B. Orton, Newark, N. J., and Gabriel F. Tucker, Philadelphia.

Drs. Lawrence Reynolds, K. E. Corrigan and H. S. Hayden, Detroit, presented a paper on "Use of Radioactive Isotopes for Differential Diagnosis of Malignant and Nonmalignant Lesions in the Throat," which was discussed by Drs. Wadsworth Warren and J. Milton Robb, Detroit.

Dr. Bruce Proctor, Detroit, presented a paper on "Surgical Anatomy of the Neck." This paper was discussed by Drs. James E. Croushore, Detroit, and Henry B. Orton, Newark, N. J.

SECTION ON MISCELLANEOUS TOPICS

Session on Allergy

WEDNESDAY, JUNE 13—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Samuel M. Feinberg, Chicago.

A round table discussion on "ACTH and Cortisone in Allergic Diseases" was conducted by Dr. Robert A. Cooke and Dr. Marion B. Sulzberger, New York.

Dr. John H. Mitchell, Columbus, Ohio, presented a paper on "Antihistamines in Allergic Disorder," which was discussed by Dr. Carl E. Arbesman, Buffalo, and Dr. Mitchell.

Dr. Samuel M. Feinberg, Chicago, delivered the chairman's address: "Allergy Therapy; Some Common Misconceptions," which was discussed by Dr. Horace S. Baldwin, New York.

Dr. Oren C. Durham, Chicago, read a paper on "Pollen Prevalence and Pollen-Free Areas." This paper was discussed by Dr. Lawrence J. Halpin, Cedar Rapids, Iowa.

Drs. Karl D. Figley and Frank F. A. Rawling, Toledo, Ohio, presented a paper on "Diagnostic Methods in Food Allergy," which was discussed by Dr. Mary H. Loveless, New York.

Sessions on Military Medicine

THURSDAY, JUNE 14—AFTERNOON

The meeting was called to order at 2:10 p. m. by the chairman, Dr. Russel V. Lee, Palo Alto, Calif.

Dr. Richard L. Meiling, Washington, D. C., presented a paper on "The Changing Military Medical Picture in the United

States of America." This paper was discussed by Drs. Paul I. Robinson; Harry Armstrong, and H. Lamont Pugh, Washington, D. C.

Dr. E. R. Hering, Korea, read a paper on "Combat Medical Experience," which was discussed by Drs. Oral B. Bolibaugh, San Francisco, and William D. Preston, Washington, D. C.

Dr. Truman Blocker, Galveston, Texas, read a paper on "Treatment of Burns." This paper was discussed by Drs. Edwin J. Pulaski, San Antonio, Texas; Everett I. Evans, Richmond, Va.; Paul E. Spangler, Norfolk, Va., and Frederick M. Allen, New York.

Dr. Bertram Groesbeck, Washington, D. C. read a paper on "Survival, Rescue and Resuscitation." This paper was discussed by Drs. Ray G. Daggs, Fort Knox, Ky., and Alonzo A. Towner, Washington, D. C.

Dr. Howard A. Rusk, New York, read a paper on "Procurement, Assignment and Utilization of Reserve Medical Officers," which was discussed by Drs. Paul I. Robinson, Wallace H. Graham, and C. W. Stelle, Washington, D. C.

A paper on "Cold Injuries with Emphasis on Frostbite" was presented. This paper was discussed by Drs. Everett Homer Dickinson, Oakland, Calif.; Kurt Lange, New York; Francis S. Adams, Pueblo, Colo.; Robert B. Lewis, Randolph Field, Texas, and Kenneth D. Orr, U. S. Army.

Friday, June 15—Afternoon

The meeting was called to order at 2 o'clock by the vice chairman, Dr. Francis B. Berry, New York.

Dr. Wilfred Hall, Washington, D. C., presented a paper on "Air Evacuation," which was discussed by Drs. Bertram Groesbeck, Washington, D. C., and Byron L. Steger, Baltimore.

Dr. Thomas L. Willmon, New London, Conn., presented a paper on "Man and the Submarine," which was discussed by Dr. Ebbe C. Hoff, Richmond, Va.

Dr. James J. Sapero, Cairo, Egypt, presented a paper on "Communicable Diseases of Africa and the Middle East." This paper was discussed by Dr. Joseph E. Smadel and Dr. John S. Paul, Washington, D. C.

Dr. Edward J. Kendricks, Washington, D. C., presented a paper on "Practical Problems in Aviation Medicine," which was discussed by Dr. Ashton Graybiel, Pensacola, Fla.

Dr. Franklin C. McLean, Chicago, presented a paper on "Progress in the Prevention and Treatment of Radiation Injury." This paper was discussed by Dr. Harry H. Haight, Washington, D. C.

Dr. August W. Spittler, Washington, D. C. presented a paper on "Orthopedic Problems in the Field," which was discussed by Drs. Chalmers Carr, Washington, D. C., and Oscar Reeder, Phoenixville, Pa.

The chairman announced that the Council on Scientific Assembly had agreed to appoint the following physicians as officers of the newly formed Section on Military Medicine: Chairman, Dr. Melvin A. Casberg, St. Louis; vice chairman, Dr. Richard A. Kern, Philadelphia; secretary, Dr. Sheldon S. Brownton, Fort Slocum, N. Y.

Dr. Russel V. Lee, Palo Alto, Calif., was elected delegate.

SECTION ON NERVOUS AND MENTAL DISEASES

Wednesday, June 13—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Louis J. Karnosh, Cleveland.

A paper entitled "Psychiatric Treatment in General Hospitals in the United States and Canada," was presented by Drs. A. E. Bennett, Bernice Engle, and Eugene A. Hargrove, Berkeley, Calif. This paper was discussed by Drs. Baldwin L. Keyes, Philadelphia, and A. E. Bennett, Berkeley, Calif.

Dr. Eugene Ziskind, Los Angeles, read a paper entitled "The Cure of Emotional and Social Etiological Factors in Medical Patients." This paper was discussed by Dr. James P. Scanlon, Washington, D. C., and Dr. Ziskind.

Dr. Edward A. Strecker, Philadelphia, read a paper entitled "Therapeutic Aspects of Alcoholism," which was discussed by Drs. Frederick Lemere, Seattle; Robert V. Seliger, Baltimore; Arthur M. Sackler, New York and Dr. Strecker.

A "Report of the Section Committee Concerning the Licensure or Certification of Clinical Psychologists," was presented by Dr. Francis J. Gerty, Mr. J. W. Holloway and Dr. R. P. Mackay, Chicago.

A paper entitled "The Psychiatric Manifestations of Acute Pancreatitis," was presented by Drs. Charles Savage and Wendell A. Butcher, Bethesda, Md., and Douglas Noble, Washington, D. C., and was discussed by Drs. Edward Weiss, Philadelphia; George N. Raines, Washington, D. C., and Dr. Noble.

Drs. Robert A. Matthews and Ian P. Stevenson, New Orleans, presented a paper entitled "Theory and Fact in Psychosomatic Medicine." This paper was discussed by Drs. David McK. Rioch, Washington, D. C.; Francis J. Gerty, Chicago, and Dr. Stevenson.

A paper entitled "The Psychiatric Aspects of Cortisone and ACTH Administration," was presented by Drs. Francis J. Braceland and Howard P. Rome, Rochester, Minn., and was discussed by Dr. Cecil L. Wittson, Omaha, and Dr. Braceland.

Thursday, June 14—Afternoon

The following officers were elected: chairman, Dr. Frank H. Luton, Nashville, Tenn.; vice chairman, Dr. A. Earl Walker, Baltimore; secretary, Dr. Francis M. Forster, Washington, D. C.; representative to American Board of Psychiatry and Neurology, Dr. Francis J. Gerty, Chicago; delegate, Dr. Hans H. Reese, Madison, Wis.; alternate delegate, Dr. Paul C. Bucy, Chicago; chairman of Scientific Exhibits, Dr. Leon Whitsell, San Francisco.

On motion of Dr. George N. Raines, Washington, D. C., seconded by Dr. Percival Bailey, Chicago, it was voted unanimously to accept the report of the Section Committee Concerning the Licensure or Certification of Clinical Psychologists as an expression of the point of view of the section, and that the report be transmitted to the Director of the Bureau of Legal Medicine and Legislation of the American Medical Association, with the recommendation that it be adopted as the official point of view of the American Medical Association and be implemented by appropriate action of the American Medical Association.

On motion of Dr. Robert T. Morse, Washington, D. C., seconded by Dr. Daniel Blain, Washington, D. C., it was voted unanimously that the chairman appoint a committee of not less than three or more than five members to serve, through the annual session in 1954, in an advisory capacity to the Bureau of Legal Medicine and Legislation of the American Medical Association and to report to the Section at each annual session on matters pertaining to the legal control and practice of clinical psychology.

Dr. Percival Bailey, Chicago, section delegate, reported on actions of the House of Delegates.

A motion by Dr. Roland P. Mackay, Chicago, to request the House of Delegates not to change the name of the section was duly seconded and carried.

Dr. Francis J. Braceland, Rochester, Minn., gave a report on the American Board of Psychiatry and Neurology.

Dr. Francis M. Forster, secretary, read a report on the American Board of Neurology.

Dr. Percival Bailey, Chicago, presented a resolution requesting the House of Delegates to seek legislation permitting civilians with severe transverse lesions of the spinal cord to be admitted to paraplegic wards of veterans hospitals. The resolution was adopted on motion duly made, seconded and carried.

Dr. Louis J. Karnosh, Cleveland, presented the chairman's address, "Neurology and Human Emotions."

Dr. Alexander T. Ross, Indianapolis, read a paper on "Comparative Incidence of Residual Defects Following Serum, Sulfonamide and Sulfapenicillin Therapy for Meningococcic Meningitis." This paper was discussed by Drs. Ellsworth C. Alvord, Washington, D. C.; Roland P. Mackay, Chicago, and Dr. Ross.

A paper entitled "The Effects of Pituitary Adrenocorticotropic Hormone (ACTH) and Cortisone on Disorders of the Nervous System," was presented by Drs. Gilbert H. Glaser and H. Houston Merritt, New York, and was discussed by Drs. Donald McEachern, Montreal, Can.; Roland P. Mackay, Chicago; Nathan S. Schlezinger, Philadelphia, and Drs. Merritt and Glaser.

Drs. Morris J. Tissenbaum, Harry M. Harter and Arnold P. Friedman, New York, presented a paper entitled "Organic Neurologic Syndromes Diagnosed as Functional Disorders." This paper was discussed by Drs. Russell M. DeJong, Ann Arbor, Mich.; Johannes M. Nielsen, Los Angeles, and Dr. Friedman.

Dr. Elinor R. Ives, Los Angeles, read a paper on "Comparison of the Efficacy of Various Drugs in the Treatment of Epilepsy," which was discussed by Drs. Jerome K. Merlis, Framingham, Mass.; Daniel Sciarra, New York, and David R. Talbot, San Diego, Calif.

Dr. Nathan S. Schlezinger, Philadelphia, read a paper entitled "The Present Status of Therapy in Myasthenia Gravis." This paper was discussed by Drs. Robert S. Schwab, Boston; Clark H. Millikan, Rochester, Minn., and Dr. Schlezinger.

Friday, June 15—Afternoon

The chairman appointed the following as a committee to serve in connection with the program outlined by the special Committee on Licensure or Certification of Clinical Psychologists: Dr. Daniel Blain, chairman, Washington, D. C.; Dr. Paul E. Huston, Iowa City; Dr. Philip Q. Roche, Philadelphia, and Dr. Manfred S. Guttmacher, Baltimore.

Dr. Joseph P. Evans, Cincinnati, read a paper entitled "Acute Head Injury," which was discussed by Drs. E. Jefferson Browder, Brooklyn, and Robert A. Groff, Philadelphia.

A paper entitled "X-Ray Visualization of the Intervertbral Disc 'Discography,'" was presented by Drs. W. James Gardner, R. E. Wise, E. C. Weiford, and C. R. Hughes, Cleveland. This paper was discussed by Drs. Edward Chamberlain, Philadelphia; Frederick P. Moersch, Rochester, Minn.; Ralph B. Cloward, Honolulu, and Dr. Gardner.

Drs. E. A. Spiegel, H. T. Wycis, and Herbert Freed, Philadelphia, presented a paper entitled "Stereoencephalotomy (Thalamotomy and Related Procedures)." This paper was discussed by Drs. J. W. Papez, Columbus, Ohio; John Hunter, Montreal, Canada, and Dr. Spiegel.

Dr. H. Russell Meyers, Iowa City, read a paper entitled "The Surgical Treatment of Epilepsy: Remarks Concerning Current Premises and Criteria for Evaluation End Results," which was discussed by Dr. Herbert Jasper, Montreal, Canada; A. Earl Walker, Baltimore, and Dr. Meyers.

Dr. James W. Watts, Washington, D. C., read a paper entitled "Psychosurgery: Accomplishments, Limitations and Risks in the Management of Intractable Pain." This paper was discussed by Drs. Yale D. Koskoff, Pittsburgh, and Gilbert Horrax, Boston.

Dr. Michael M. Scott, Philadelphia, read a paper entitled "Cerebral Apoplexy Due to Intracranial Hemorrhage: The Life-Saving Value of Surgical Intervention." This paper was discussed by Drs. Lester A. Mount, New York; Stephen E. Gurdjian, Detroit; H. Russell Meyers, Iowa City, and Dr. Scott.

SECTION ON OBSTETRICS AND GYNECOLOGY

Wednesday, June 13—Morning

The meeting was called to order at 9 o'clock by the chairman, Dr. Arthur B. Hunt, Rochester, Minn.

Dr. Clarence C. Briscoe, Philadelphia, read a paper on "The Use of Intravenous Iron in the Practice of Obstetrics and Gynecology," which was discussed by Dr. Harvey B. Matthews, Brooklyn.

Drs. Milton L. McCall and Harry W. Taylor, Philadelphia, presented a paper on "The Effect of Barbiturate Sedation on the Brain in Toxemia of Pregnancy." This paper was discussed by Dr. Thaddeus L. Montgomery, Philadelphia.

Drs. Henry B. Turner and Frank E. Whitacre, Memphis, Tenn., presented a paper on "Changes in the Treatment of Eclampsia," which was discussed by Drs. Charles H. Peckham, Manchester, Conn.; Thomas K. Preston, Anthony, N. M., and B. H. Passmore, San Antonio, Texas.

Drs. H. Bristol Nelson, Brookline, Mass., and Priscilla White, Boston, presented a paper on "The Management of Pregnancy in the Diabetic Patient." This paper was discussed by Drs. Samuel A. Cosgrove, Jersey City, N. J., and Priscilla White, Boston.

Drs. William Mulligan and John Rock, Brookline, Mass., presented a paper on "The Response of Human Ovaries to Hypophysial Gonadotropins." This paper was discussed by Drs. Elmer Louis Sevringhause, Nutley, N. J., and M. Edward Davis, Chicago.

Dr. Robert J. Lowrie, New York, presented a paper on "Frigidity in Women," which was discussed by Drs. Sophia J. Kleegman and Anna Kleegman Daniels, New York.

Thursday, June 14—Morning

The following officers were elected: chairman, Dr. Louis H. Douglass, Baltimore; vice chairman, Dr. Albert W. Holman, Portland, Ore.; secretary, Dr. Bernard J. Hanley, Los Angeles; delegate, Dr. Harvey B. Matthews, Brooklyn; alternate delegate, Dr. Daniel G. Morton, Los Angeles; representative to the Scientific Exhibit, Dr. Frederick H. Falls, Chicago. Also elected were: representative to the Board of Governors of the American College of Surgeons, Dr. Willard R. Cooke, Galveston, Texas; representatives to the American Board of Obstetrics and Gynecology; Dr. F. Bayard Carter, Durham, N. C., Dr. Robert A. Kimbrough Jr., Philadelphia, and Dr. Robert L. Faulkner, Cleveland; representatives to the American Committee on Maternal Welfare, Dr. William Benbow Thompson, Los Angeles, Dr. Robert D. Mussey, Rochester, Minn., and Dr. Oren Moore, Charlotte, N. C.; representative to the Board of Governors of the National Federation of Obstetric-Gynecologic Societies, Dr. Ralph E. Campbell, Madison, Wis.

The section went on record at favoring the International Recommendations on Definitions of Live Birth and Fetal Death as presented in U. S. Public Health Service publication No. 39.

The section endorsed the new classification of cervical carcinoma as approved at the Fourth American Congress on Obstetrics and Gynecology, May 14-19, 1950.

On motion of Dr. Emil Novak, Baltimore, seconded by Dr. Alfred J. Kobak, Chicago, it was voted to adopt a resolution requesting the Board of Trustees to allocate additional funds to each section sufficient in amount to pay the expenses in full or in part of the section delegates to the American Medical Association sessions.

Dr. Arthur B. Hunt, Rochester, Minn., presented the chairman's address, entitled "Experiences with Test of Labor; Evaluation of Its Present Worth."

Dr. Albert Sharman, Glasgow, Scotland, presented a paper on "Some Therapeutic Experiments in Female Infertility."

Drs. Douglas M. Haynes, Dallas, Texas; W. W. Brown, Waco, Texas; Richard L. Hermes, Lawrence, Kans., and C. R. Bates Jr. and William F. Mengert, Dallas, Texas, presented a paper on "Cytology for Early Detection of Uterine Cancer." This paper was discussed by Drs. Charles E. Smith, Chicago; John R. Graham, Boston, and Sophia J. Kleegman, New York.

Drs. Gerald A. Galvin, Howard W. Jones and Richard W. TeLinde, Baltimore, presented a paper on "The Clinical Relationship Between Carcinoma in Situ and Invasive Carcinoma of the Cervix." This paper was discussed by Drs. James A. Corscaden, New York; Jacob Hoffman, Philadelphia; Charles S. Stevenson, Detroit; Emil Novak, Baltimore, and Carl Henry Davis, Miami, Fla.

Drs. Alfred J. Kobak, Charles Fields and James E. Fitzgerald, Chicago, presented a paper on "Chemo-Antibiotics and Low Cervical Cesarean Section in Dystocia or Intrapartum Sepsis." This paper was discussed by Drs. Gordon Douglas, New York; Arthur B. Hunt, Rochester, Minn.; J. Bay Jacobs, Washington, D. C., and Bernard J. Hanley, Los Angeles.

Dr. H. L. Stewart Jr. presented a paper on "The Duration of Pregnancy and Postmaturity," which was discussed by Dr. Allan C. Barnes, Columbus, Ohio.

Friday, June 15—Morning

Drs. Richard Torpin and Alva M. H. Faulkner, Augusta, Ga., presented a paper on "Further Studies in Regard to the Influence of the Placental Site on Fetal Presentation." This paper was discussed by Dr. Charles S. Stevenson, Detroit.

Drs. George Schaefer, Forest Hills, N. Y., and Harry H. Epstein, Jamaica, N. Y., presented a paper on "Therapeutic Abortion in Pulmonary Tuberculosis," which was discussed by Dr. Edward W. Hayes, Monrovia, Calif.

Drs. Harry Sered, Frederick H. Falls and Bruce P. Zummo, Chicago, presented a paper on "Further Observations in the Management of Gynecologic Tuberculosis with Streptomycin." This paper was discussed by Dr. Paula M. Horn, Los Angeles, and Dr. Albert Sharman, Glasgow, Scotland.

Drs. W. H. Grimes, R. A. Bartholomew, E. D. Colvin, John S. Fish, and William M. Lester, Atlanta, Ga., presented a paper on "Management of Breech Presentation in Pregnancy and Labor." This paper was discussed by Drs. Milton G. Potter, Buffalo; Bernard J. Hanley, Los Angeles, and Frederick H. Falls, Chicago.

Drs. S. Leon Israel and Alfred S. Conston, Philadelphia, presented a paper on "Unrecognized Pituitary Necrosis (Sheehan's Syndrome): A Cause of Sudden Death." This paper was discussed by Dr. David N. Danforth, Evanston, Ill., and Dr. Arthur B. Hunt, Rochester, Minn.

Dr. Charles Newberger, Chicago, presented a paper on "Maternal Mortality in Downstate Illinois: A Three-Year Review, 1948-1950," which was discussed by Drs. Philip F. Williams, Philadelphia; Frederick H. Falls, Chicago, and Michael S. Rapp, Staten Island, N. Y.

COMBINED MEETING OF SECTION ON OPHTHALMOLOGY WITH ASSOCIATION FOR RESEARCH IN OPHTHALMOLOGY

Association for Research in Ophthalmology

WEDNESDAY, JUNE 13—MORNING

The meeting was called to order at 9:30 a. m. by the chairman of the Association for Research in Ophthalmology, Dr. Kenneth C. Swan, Portland, Ore.

Dr. Robert J. Masters, Indianapolis, chairman of the Section on Ophthalmology, expressed gratification on behalf of the section that the Association for Research in Ophthalmology had accepted the invitation of the section to meet with it.

Dr. K. W. Ascher, Cincinnati, read a paper on "Aqueous Veins and Contact Lenses," which was discussed by Drs. Georgiana Theobald, Oak Park, Ill.; Ludwig von Sallman, Joseph I. Pascal, and John M. McLean, New York, and K. W. Ascher, Cincinnati.

Drs. Gordon S. Christiansen and P. J. Leinfelder, Iowa City, presented a paper on "A Critical Study of Lens Metabolism: (1) Nonenzymatic 'Respirations'; (2) Glycolysis." This paper was discussed by Drs. John Harris, Washington, D. C.; John Bellows, Chicago; William Hart, Philadelphia; Jonas S. Friedenwald, Baltimore; V. Everett Kinsey, Detroit, and Gordon S. Christiansen, Iowa City.

Dr. Peter C. Kronfeld, Chicago, read a paper on "The Chemical Demonstration of Transconjunctival Passage of Aqueous After Antiglaucomatous Operations," which was discussed by Drs. Harold G. Scheie, Philadelphia, and Peter C. Kronfeld, Chicago.

Drs. Jay G. Linn Jr. and Raymond C. Tomarelli, Pittsburgh, presented a paper entitled "An Evaluation of the Various Anticholinesterase Agents." This paper was discussed by Drs. W. Morton Grant, Boston, and Jay G. Linn Jr., Pittsburgh.

WEDNESDAY, JUNE 13—AFTERNOON

Drs. M. L. Stillerman, E. L. Gibbs and Meyer Perlstein, Chicago, presented a paper on "Encephalographic Changes in Strabismus." This paper was discussed by Drs. George Guibor, Chicago; Donald Lyle, Cincinnati; Arthur Linksz, New York; Harold Falls, Ann Arbor, Mich., and M. L. Stillerman, Chicago.

Drs. Franklin P. Bousquet and William E. Laupus, New York, presented a paper on "Retrolental Fibroplasia: The Role of Hemorrhage in Its Pathogenesis," which was discussed by Drs. Frederick H. Verhoeff and Parker Heath, Boston; Harold Falls, Ann Arbor, Mich.; Jonas Friedenwald, Baltimore, and Franklin P. Bousquet, New York.

Dr. John W. Patterson, Cleveland, read a paper on "Diabetic Cataract Formation," which was discussed by Drs. Ludwig von Sallman, New York; David G. Cogan, Boston, and John W. Patterson, Cleveland.

Drs. Seymour P. Halbert and Lois Swick, New York, presented a paper on "Antibiotic-Producing Bacteria of the Ocular Flora." This paper was discussed by Drs. Henry F. Allen, Boston; Alson E. Braley, Iowa City, and Seymour P. Halbert, New York.

Dr. Joseph V. M. Ross, Berwick, Pa., read a paper on "Polymyxin in Experimental Ocular Pseudomonas Aeruginosa Infections."

Dr. Robert L. Wiggins, New York, read a paper on "Experimental Studies on the Eye with Polymyxin B."

These two papers were discussed by Drs. Henry F. Allen, Boston; Alson E. Braley, Iowa City, and Ludwig von Sallman, New York.

THURSDAY, JUNE 14—MORNING

Dr. Glenn O. Dayton Jr., Buffalo, read a paper on "The Effect of ACTH on Experimentally Produced Exophthalmus," which was discussed by Drs. Lorand V. Johnson, Cleveland; John M. McLean, New York; John W. Henderson, Rochester, Minn., and Glenn O. Dayton Jr., Buffalo.

Dr. Gordon L. Walls, Berkeley, Calif., read a paper on "The Lateral Geniculate Nucleus and Visual Histophysiology," which was discussed by Drs. Donald Lyle, Cincinnati; David G. Cogan, Boston; Jonas S. Friedenwald, Baltimore; Arthur Linksz, New York, and Gordon L. Walls, Berkeley, Calif.

Drs. Albert M. Potts and Lorand V. Johnson, with the technical assistance of Doris Goodman, Cleveland, presented a paper on "Studies on the Visual Toxicity of Methyl Alcohol: The Effect of Methyl Alcohol and Its Oxidation Products on Some Retinal Metabolic Processes."

Drs. Anita P. Gilger, Albert M. Potts and Lorand V. Johnson, Cleveland, presented a paper on "Studies on the Visual Toxicity of Methyl Alcohol: The Effect of Parenterally Administered Substances on the Systemic Toxicity of Methyl Alcohol."

These two papers were discussed by Drs. Virgil G. Casten, Boston; P. J. Leinfelder, Iowa City; Jonas S. Friedenwald, Baltimore; David G. Cogan, Boston; Gordon L. Walls, Berkeley, Calif.; Walter H. Fink, Minneapolis, and Albert M. Potts and Anita P. Gilger, Cleveland.

Dr. Warner K. Noell, Randolph Field, Texas, read a paper on "Electrophysiological Study of the Retina During Metabolic Impairment," which was discussed by Drs. J. E. Lebensohn, Chicago, and William J. Holmes, Honolulu.

Drs. C. G. Smith and C. D. Baird, Toronto, Canada, presented a paper on "The Effect of Experimental Ischemia on the Retinal Cells Due to Intraocular-Pressure Increase." This paper was discussed by Drs. Derrick Vail, Chicago; P. Robb McDonald, Philadelphia; A. Alexander Knapp, New York; Henri Pichette, Quebec City, Canada, and C. G. Smith, Toronto, Canada.

Section on Ophthalmology

THURSDAY, JUNE 14—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Robert J. Masters, Indianapolis.

The chairman announced with regret that Dr. Holger Ehlers, Copenhagen, Denmark, would be unable to attend the meeting due to pressure of duties at home. He presented two foreign guests, Dr. Antonio Grignolo, Parma, Italy, and Dr. Florian Verrey, Zurich, Switzerland.

Dr. M. Hayward Post, St. Louis, chairman of the executive committee of the section, presented the Prize in Ophthalmology to Dr. Georgiana Dvorak Theobald, Chicago.

The chairman's address was read by Dr. Robert J. Masters, Indianapolis.

Dr. W. Morton Grant, Boston, read a paper on "Clinical Measurements of Aqueous Outflow," which was discussed by Drs. Jonas S. Friedenwald, Baltimore; Paul A. Chandler, Boston; Peter C. Kronfeld, Chicago; K. W. Ascher, Cincinnati, and Thomas M. D'Angelo, Flushing, New York.

Drs. Solomon S. Brav and H. Peter Kirber, Philadelphia, presented a paper on "Mass Screening for Glaucoma." This paper was discussed by Drs. Peter C. Kronfeld, Chicago; Adolph Posner, New York; H. Saul Sugar, Detroit; Franklin M. Foote, New York; Louis Lehrfeld, Philadelphia; Harold P. Falls, Ann Arbor, Mich.; K. W. Ascher, Cincinnati, and Solomon S. Brav, Philadelphia.

The chairman, Dr. Robert J. Masters, Indianapolis, read a communication from Dr. George F. Lull, Secretary of the American Medical Association, regarding the American Medical Education Foundation.

Dr. Everett L. Goar, Houston, Texas, read a paper on "Rheumatoid Nodules of the Eye," which was discussed by Drs. Frederick H. Verhoeff, Boston; Merrill J. King, Brookline, Mass.; A. Alexander Knapp, New York, and Everett L. Goar, Houston, Texas.

Dr. Arthur A. Siniscal, Rolla, Mo., read a paper on "Sulfonamides and Antibiotics in Trachoma," which was discussed by Drs. Alson E. Braley, Iowa City; Henry F. Allen, Boston; Frederick H. Theodore, New York, and Arthur A. Siniscal, Rolla, Mo.

Dr. Florian Verrey, Zurich, Switzerland, presented a film on "The Cytology of the Aqueous Humor."

Friday, June 15—Morning

Executive Session

The Executive Session was called to order at 9 o'clock by the chairman, Dr. Robert J. Masters, Indianapolis.

The secretary, Dr. Trygve Gundersen, Boston, read the report of the American Committee on Optics and Visual Physiology, which was accepted and filed, on motion duly seconded and carried.

Dr. Algernon B. Reese, chairman, read the report of the Committee for the Award of the Knapp Medal for the Year 1950. On motion of Dr. Everett L. Goar, seconded by Dr. Parker Heath and carried, the report was received and filed.

In the absence of the chairman, Dr. Phillips Thygeson, Dr. Gundersen read the report of the Committee on the American Board of Ophthalmology. There being no objection, the report was received and filed.

Dr. Parker Heath, consultant, read the Report of the Registry of Ophthalmic Pathology. Without objection, the report was received and filed.

Dr. Gundersen read the report of the Exhibit Committee, of which Dr. Georgiana D. Theobald is chairman. There being no objection, the report was received and filed.

Dr. Gundersen read the report of the Committee on Museum of Ophthalmic History. Without objection, the report was received and filed.

Dr. Parker Heath read the report on the Knapp Testimonial Fund. Dr. Arthur Bedell moved that the Section on Ophthalmology record its thanks to the Kresge Foundation for its generous contribution. The motion was duly seconded and carried.

Dr. M. Hayward Post, delegate to the 16th International Congress of Ophthalmology, read his report. At the conclusion of the report, Dr. Post gave special recognition to the great service that Dr. Bernard Samuels has done for American ophthalmology in bringing the next International Congress to this country. Without objection, Dr. Post's report was received and filed.

Dr. Post moved that the executive committee be empowered to contact Prof. Eduoard Hart of Paris with an application by the section for membership in the International Federation of Ophthalmological Societies. The motion was seconded by Dr. Everett L. Goar and carried.

The report of Dr. A. D. Ruedemann, chairman of the Joint Committee on Industrial Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology, was received and filed.

Dr. Post read the report of the executive committee, which was received. In receiving the report, the section elected the officers nominated by the committee, as follows: chairman, Dr. Edwin B. Dunphy, Boston; vice chairman, Dr. Georgiana Dvorak Theobald, Oak Park, Ill.; secretary, Dr. Trygve Gundersen, Boston; delegate, Dr. William L. Benedict, Rochester, Minn.; alternate delegate, Dr. Harvey E. Thorpe, Pittsburgh.

In connection with the announcement of an invitation to attend a meeting of the Viennese Ophthalmological Society honoring the one hundredth anniversary of the birth of Prof. Ernst Fuchs, Dr. Dorman Pischel, San Francisco, offered the following resolution which was unanimously adopted:

WHEREAS, The visit to the United States in 1921 by Prof. Ernst Fuchs was a great stimulus to the further development of ophthalmology in this country; and

WHEREAS, Many of the members of this Section had an opportunity to meet this distinguished ophthalmologist whom they now remember with great respect and affection; and

WHEREAS, All ophthalmologists in the United States appreciate the great and lasting contributions to ophthalmology made by him; therefore be it

Resolved, That the Section on Ophthalmology of the American Medical Association send its greetings and best wishes to the Viennese Ophthalmological Society on the occasion of its celebration in honor of the one hundredth anniversary of the birth of Ernst Fuchs; and be it further

Resolved, That this Section wishes to join with the Viennese Ophthalmological Society in paying respect to the memory of the illustrious Professor Ernst Fuchs.

On nominations made from the floor, the following were elected as the Committee for the Award of the Knapp Medal for 1951: Dr. Frederick A. Davis, Madison, Wis.; Dr. John H. Dunnington, New York, and Dr. Arthur J. Bedell, Albany, N. Y.

Scientific Session

Dr. Charles L. Schepens, Boston, read a paper on "Subclinical Retinal Detachment," which was discussed by Drs. John H. Dunnington, New York; P. Robb McDonald, Philadelphia; S. Rodman Irvine, Baltimore; Harvey E. Thorpe, Pittsburgh; Henry Minsky, New York; Jonas S. Friedenwald, Baltimore; Florian Verrey, Zurich, Switzerland, and Charles L. Schepens, Boston.

Dr. Antonio Grignolo, Parma, Italy, read a paper on "Fibrous Components of the Vitreous Body." This paper was discussed by Drs. Ludwig von Sallman, New York; Jonas S. Friedenwald, Baltimore; Harvey E. Thorpe, Pittsburgh; Henry Minsky, New York, and Antonio Grignolo, Parma, Italy.

Dr. Alston Callahan, Birmingham, Ala., read a paper on "Lateral Cataract Extraction Following Filtering Operation," which was discussed by Drs. Frederick H. Verhoeff, Boston; Everett L. Goar, Houston, Texas; A. Alexander Knapp, New York; Samuel J. Meyer, Chicago, and Alston Callahan, Birmingham, Ala.

Friday, June 15—Afternoon

Dr. Walter H. Fink, Minneapolis, read a paper on "The Vertical Component in Strabismus," which was discussed by Drs. Francis H. Adler, Philadelphia; Lorand V. Johnson, Cleveland, and Walter H. Fink, Minneapolis.

Dr. Harvey E. Thorpe, Pittsburgh, read a paper on "ACTH and Cortisone in Ocular Surgery," which was discussed by Drs. R. Townley Paton and John M. McLean, New York, and Harvey E. Thorpe, Pittsburgh.

Drs. Algernon B. Reese, Frederick C. Blodi, William A. Silverman and John C. Locke, New York, presented a paper on "The Influence of ACTH on the Course of Retrolental Fibroplasia." This paper was discussed by Drs. Victor Everett Kinsey, Detroit; William C. Owens, Baltimore; Merrill J. King, Boston, and Algernon B. Reese, New York.

Dr. Irwin T. Mancall, Boston, read a paper on "Occlusion of the Central Retinal Vein," which was discussed by Drs. Angus L. MacLean, Baltimore, and Frederick H. Verhoeff, Boston.

Drs. Ivan F. Duff, Harold F. Falls and James W. Linman, Ann Arbor, Mich., presented a paper on "Anticoagulant Therapy in Occlusive Vascular Retinal Disease." This paper was discussed by Drs. Alexander E. MacDonald, Toronto, Canada; Irving H. Leopold, Philadelphia, and Harold F. Falls, Ann Arbor, Mich.

Drs. George M. Haik, Wood Lyda and Richey L. Waugh Jr., New Orleans, presented a paper on "Sympathetic Ophthalmia." This paper was discussed by Drs. Alan C. Woods, Baltimore; Paul A. Chandler, Boston; S. Rodman Irvine, Baltimore; Daniel M. Gordon, New York, and Wood Lyda, New Orleans.

SECTION ON ORTHOPEDIC SURGERY

Wednesday, June 13—Morning

The meeting was called to order at 9 o'clock by the chairman, Dr. Walter P. Blount, Milwaukee.

The chairman announced that because of the absence of Dr. Joseph S. Barr, Boston, he had appointed the vice chairman, Dr. Frederic C. Bost, San Francisco, to serve on the executive committee.

Dr. Frank G. Murphy, Chicago, read a paper on "Complications of Nonunion of Fractures with Modern Treatment," which was discussed by Drs. George O. Eaton, Baltimore; Richard T. Hudson, Louisville, Ky., and Frank G. Murphy, Chicago.

Drs. George J. Garceau and Eugene Salvati, Indianapolis, presented a paper on "Complications of Orthopedic Surgical Procedures." This paper was discussed by Drs. I. William Nachlas, Baltimore; Frederick R. Thompson, New York, and George J. Garceau, Indianapolis.

Dr. Julius S. Neviaser, Washington, D. C., read a paper on "Acromioclavicular Dislocation Treated by Transference of the Coracoacromial Ligament," which was discussed by Drs. Andrew Schildhäus, Brooklyn, and August W. Spittler and Julius S. Neviaser, Washington, D. C.

Dr. Jesse T. Nicholson, Philadelphia, read a paper on "Glenoid Shelf Operation for Recurrent Dislocation of the Shoulder," which was discussed by Drs. Frederic C. Bost, San Francisco; J. Hamilton Allan, Charlottesville, Va., and Jesse T. Nicholson, Philadelphia.

Dr. Moore Moore Jr., Memphis, Tenn., read a paper on "Radiohumeral Synovitis," which was discussed by Drs. Milton C. Cobey, Washington, D. C.; Donald C. Conzett, Dubuque, Iowa, and Walter P. Blount, Milwaukee.

Dr. Henry Herman Young, Rochester, Minn., read a paper on "Nonneurologic Lesions Simulating Protruded Intervertebral Disk." This paper was discussed by Drs. David M. Bosworth, New York; Robert J. Joplin, Brookline, Mass., and Henry Herman Young, Rochester, Minn.

Thursday, June 14—Morning

The following officers were elected: chairman, Dr. Frederic C. Bost, San Francisco; vice chairman, Dr. Henry R. McCarroll, St. Louis; representatives to the American Board of Orthopedic Surgery, Mather Cleveland, New York, and Walter Graham, Santa Barbara, Calif; chairman, section committee on Scientific Exhibits, Dr. J. Vernon Luck, Los Angeles; delegate, Dr. Edward L. Compere, Chicago; alternate, Dr. Francis M. McKeever, Los Angeles.

Drs. F. P. Kreuz, G. W. Hyatt, T. C. Turner and C. A. L. Bassett, Bethesda, Md., presented a paper on "The Use of Preserved Tissues in Orthopedic Surgery." This paper was discussed by Drs. Philip D. Wilson, New York; Lenox D. Baker, Durham, N. C., and G. W. Hyatt, Bethesda, Md.

As a variation from the usual procedure, the author listed and the two discussants combined in writing a paper on "Medullary Fixation of the Femur: Indications, Technic, Complications and Errors," which was presented in succession by Drs. Edwin F. Cave, Boston; August W. Spittler, Washington, D. C. and Hugh M. A. Smith, Memphis, Tenn.

Dr. Edward L. Compere, Chicago, as the delegate of the section, reported extemporaneously on the work of the House of Delegates.

Dr. Henry R. McCarroll, St. Louis, moved that the Section on Orthopedic Surgery go on record as requesting the Board of Trustees of the American Medical Association to appropriate a sum of money to the section, of not less than $1500, for the section to use as it sees fit in defraying the necessary expenses of the section delegate to the House of Delegates. The motion was seconded by Dr. Samuel Kleinberg, New York, and carried.

Dr. Samuel Kleinberg, New York, moved that the section pass a resolution requesting that the By-Laws of the American Medical Association be amended to make the delegate of the section a member of the executive committee of the Section on Orthopedic Surgery. The motion was seconded by Dr. H. H. Young, Rochester, Minn., and carried unanimously.

Dr. Walter P. Blount, Milwaukee, read the chairman's address on "Control of Bone Length."

Drs. John G. Kuhns, Boston, and Robert S. Hormell, Brookline, Mass., presented a paper on "Congenital Scoliosis." This paper was discussed by Drs. Samuel Kleinberg, New York; Walter P. Blount, Milwaukee, and John G. Kuhns, Boston.

Dr. Jack K. Wickstrom, New Orleans, read a paper on "Rehabilitation of Civilian Amputees: An Evaluation of 235 Amputees and the Problems of Their Rehabilitation." This paper was discussed by Drs. T. Campbell Thompson, New York; Henry H. Kessler, Newark, N. J., and Jack K. Wickstrom, New Orleans.

Friday, June 15—Morning

Dr. Leonard T. Peterson, Washington, D. C., read a paper on "Principles of Internal Fixation with Plates and Screws," which was discussed by Drs. Francis W. Glenn, Miami, Fla.; Vernon P. Thompson, Los Angeles; Elmer P. Weigel, Plainfield, N. J., and Leonard T. Peterson, Washington, D. C.

Drs. Maurice M. Pike and J. Whitfield Larrabee, Hartford, Conn., presented a paper on "The Use of Cancellous Bone Grafts in Those Fresh Fractures Which Come to Open Reduction." This paper was discussed by Drs. William J. Tobin, Washington, D. C. and Maurice M. Pike, Hartford, Conn.

Dr. Dana M. Street, Memphis, Tenn., read a paper on "Medullary Fixation in the Forearm," which was discussed by Drs. Donald T. Imrie, Vicksburg, Miss.; Henry R. McCarroll, St. Louis; Richard T. Hudson, Louisville, Ky., and Dana M. Street, Memphis, Tenn.

Drs. Carl E. Badgley and Sylvester J. O'Connor, Ann Arbor, Mich., presented a paper on "Conservative Treatment of Tibial Plateau Fractures." This paper was discussed by Drs. John R. Moore, Philadelphia; John T. Jacobs, Denver; David M. Bosworth, New York, and Sylvester J. O'Connor, Ann Arbor, Mich.

Drs. Rudolph S. Reich and Norman J. Rosenberg, Cleveland, presented a paper on "Fractures of the Patella." This paper was discussed by Drs. Luther M. Strayer Jr., Bridgeport, Conn.; J. Neill Garber, Indianapolis, and Norman J. Rosenberg, Cleveland.

Drs. William T. Green and Jonathan Cohen, Boston, presented a paper on "Osteoid Osteoma in Children." This paper was discussed by Drs. Edward L. Compere, Chicago; Robert B. Portis, Beverly Hills, Calif., and William T. Green, Boston.

SECTION ON PATHOLOGY AND PHYSIOLOGY

Wednesday, June 13—Morning

The meeting was called to order at 9:10 a. m. by the chairman, Dr. Stanley P. Reimann, Philadelphia.

Dr. Carl J. Wiggins, Cleveland, read a paper entitled "The Regulation of Cardiac Performance: Facts vs. Theories," which was discussed by Drs. George E. Wakerlin, Chicago, and Robert W. Wilkins, Boston.

A paper entitled "Modern Concepts of Acid-Base Regulation" was read by Dr. Robert F. Pitts, Syracuse, N. Y., and was discussed by Drs. Campbell Moses, Pittsburgh, and William S. Hoffmann, Chicago.

Dr. Jesse P. Greenstein, Bethesda, Md., presented a paper on "Effect of Cancer on Liver Enzymes." This paper was discussed by Dr. Jacob Taub, New York.

A paper entitled "Tissue Reactions to a Bacterial Polysaccharide Used in the Chemotherapy of Malignant Tumors" was presented by Dr. Andrew J. Donnelly, Philadelphia, and was discussed by Drs. Herbert S. Bowman, Philadelphia; George E. Wakerlin, Chicago, and Jesse P. Greenstein, Bethesda, Md.

Thursday, June 14—Morning

The following officers were elected: chairman, Dr. Paul R. Cannon, Chicago; vice chairman, Dr. Lall G. Montgomery, Muncie, Ind.; secretary, Dr. Edwin F. Hirsch, Chicago; representative to Scientific Exhibit, Dr. Frank B. Queen, Portland, Ore.; representatives to American Board of Pathology, Drs. John Rudolf Schenken, Omaha, and Shields Warren, Boston.

The chairman, Dr. Stanley P. Reimann, Philadelphia, presented the chairman's address.

Dr. George E. Wakerlin, Chicago, read a paper entitled "The Kidney and Hypertension," which was discussed by Dr. Louis N. Katz, Chicago, and Drs. Stanley E. Bradley, Benjamin Jablons, Frederick M. Allen and Sidney A. Gladstone, New York.

A paper by Drs. Campbell Moses, Grace L. Rhodes, Evelyn Leatham and Robert S. George, Pittsburgh, entitled "The Effects of Cholesterol Feeding During Pregnancy on Blood Cholesterol, the Lipid Content of the Placenta and Placental Vascular Lesions" was presented, and was discussed by Drs. Ancel Keys, Minneapolis; Charles F. Wilkinson Jr., New York; Harry J. Corper, Denver; Laurance W. Kinsell, Oakland, Calif., and Campbell Moses, Pittsburgh.

Drs. Jacob Gershon-Cohen and Helen Ingleby, Philadelphia, presented a paper entitled "Comparative Radiology and Pathology of the Breast." This paper was discussed by Drs. Ernest E. Aegerter and Harold Isard, Philadelphia.

A paper entitled "A Study of the Mitochondria and Golgi Material in Neoplasms Arising in Human Tissues" by Drs. A. E. Bothe, A. J. Dalton and F. O. Zillessen, Philadelphia, was read, and was discussed by Dr. Harold Stewart, Bethesda, Md.

Friday, June 15—Morning

Joint Meeting with Section on Gastro-Enterology and Proctology

Dr. Lester R. Dragstedt, Chicago, read a paper entitled "The Physiology of Gastric Secretion and Its Relation to the Ulcer Problem," which was discussed by Dr. George Crile Jr., Cleveland.

Dr. Richard B. Capps, Chicago, presented a paper on "Epidemiology of Acute Hepatitis." This paper was discussed by Drs. John R. Neefe, Philadelphia; Hyman I. Goldstein, Camden, N. J., and Richard B. Capps, Chicago.

A paper entitled "ACTH in Chronic Ulcerative Colitis: Clinical Observations," was presented by Dr. Joseph B. Kirsner, Chicago, and was discussed by Drs. J. Arnold Bargen, Rochester, Minn.; Walter L. Palmer, Chicago; Dr. Hyman I. Goldstein, Camden, N. J., and Joseph B. Kirsner, Chicago.

Dr. Yale Kneeland Jr., New York, presented a paper on "Antibiotics in Gastrointestinal Disorders." This paper was discussed by Dr. Z. T. Bercovitz, New York.

SECTION ON PEDIATRICS

Wednesday, June 13—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Joseph B. Bilderback, Portland, Ore.

A panel discussion on The Therapy of Infectious Diseases was held, during which Dr. Waldo E. Nelson, Philadelphia, presided, and the following papers were presented:

Dr. Russell J. Blattner, Houston, Texas, read a paper on "Clinical Aspects of Host-Parasite Relationship."

Dr. Richard G. Hodges, Cleveland, read a paper on "Epidemiology of Upper Respiratory Diseases."

Dr. Waldo E. Nelson, Philadelphia, read a paper on "Clinical Bases for Selection of Patients for Antimicrobial Therapy."

Dr. Earle H. Spaulding, Philadelphia, read a paper on "Selection of Antimicrobial Agents by Laboratory Means."

The panel discussion was followed by a question and answer period, in which questions were presented from the floor, in written form, and were answered by the members of the panel.

Thursday, June 14—Afternoon

The following officers were elected: chairman, Dr. Walter B. Stewart, Atlantic City, N. J.; vice chairman, Dr. Eugene T. McEnery, Chicago; secretary, Dr. Wyman C. C. Cole, Detroit; delegate, Dr. Woodruff L. Crawford, Rockford, Ill.; alternate delegate, Dr. Oliver L. Stringfield, Stamford, Conn.; alternate delegate to fill unexpired term of Dr. Julius Hess, now delegate because of resignation of Dr. William Weston Sr., Dr. Woodruff L. Crawford, Rockford, Ill.; custodian of the Abraham Jacobi Fund, Dr. Hugh L. Dwyer, Kansas City, Mo.; representative to Scientific Exhibit, Dr. F. Thomas Mitchell, Memphis, Tenn.

Dr. Hugh L. Dwyer, Kansas City, Mo., read the report on the Abraham Jacobi Fund.

The secretary, Dr. Wyman C. C. Cole, Detroit, announced that the preceding day the executive committee had authorized the Abraham Jacobi Fund to pay traveling expenses plus a $15 per diem to the delegate to the House of Delegates and also to the representative to the Scientific Exhibit.

The executive committee further directed that annual solicitation for contributions to the Abraham Jacobi Fund be made to the members and friends of the Section on Pediatrics, which was authorized by vote of the section at the Atlantic City session in 1949.

The following resolution was presented by Dr. F. Thomas Mitchell, Memphis, Tenn.:

Whereas, It has been learned by the Section on Pediatrics of the American Medical Association in session at Atlantic City, N. J., June 13, 1951, that Dr. Alfred A. Walker is confined to his home because of serious illness, the membership wishes to convey to him the following resolution:

Resolved, That those present in attendance at this meeting of the section wish to express their appreciation to him for his fellowship, friendship and long service and efficient capacity in the section, and wish him well in his present illness.

On motion of Dr. Mitchell, seconded by Dr. Margaret Mary Nicholson, Washington, D. C., the resolution was adopted.

Dr. James B. Stone, Richmond, Va., presented the following resolution:

Whereas, Dr. William Weston Sr. has submitted his resignation as delegate from the section to the House of Delegates of the American Medical Association, after having filled this office faithfully and ably for over fifteen years; and

Whereas, Both as a member of this section and as its former chairman, as well as its representative to the House of Delegates, his counsel has always been wise and constructive; and

Whereas, During these years he has labored diligently and unceasingly to uphold the highest standards of the medical profession, has given many hours of hard work as well as utilized his unusual fount of knowledge, tact and experience for the betterment of pediatrics; and

Whereas, His unfailing courtesy and his delightful sense of humor have made the path easier for many, as well as making himself honored and beloved by all who have had the privilege of knowing him; therefore be it

Resolved, That the Section on Pediatrics now record its deep regret at his resignation and express its high esteem of him, and its deep appreciation of the services of this Christian gentleman.

On motion of Dr. Stone, seconded by Dr. Margaret Mary Nicholson, Washington, D. C., the resolution was adopted.

Dr. Margaret Mary Nicholson, Washington, D. C., presented the following resolution:

Whereas, The past years have been fraught with danger from the activities of those persons who would replace voluntary medicine with politically controlled medicine; and

Whereas, Those activities have been held in abeyance by the diligence, foresight and leadership of our President, Dr. Elmer L. Henderson; therefore be it

Resolved, That the Section on Pediatrics now record its grateful appreciation of his outstanding work during the past year, which has been eminently successful.

On motion regularly made and seconded, the resolution was adopted.

Dr. Joseph B. Bilderback, Portland, Ore., read the chairman's address.

Drs. Tom D. Spies, Samuel Dreizen, George S. Parker and Donald J. Silberman, Birmingham, Ala., presented a paper on "Recent Observations in the Detection and Treatment of Nutritive Failure in Children." This paper was discussed by Dr. Arild E. Hansen, Galveston, Texas.

Drs. Werner Henle and Gertrude Henle, Philadelphia, presented a paper on "The Prevention of Mumps," which was discussed by Dr. Joseph Stokes Jr., Philadelphia.

Dr. Aims C. McGuinness, Philadelphia, read a paper on "A Review of Current Trends in Active and Passive Immunization," which was discussed by Drs. L. W. Sauer, Evanston, Ill.; James P. Leake, Washington, D. C., and Joseph Stokes Jr., Philadelphia.

Dr. Vida H. Gordon, Little Rock, Ark., read a paper on "Infantile Eczema: Management in Pediatric Practice and Prophylactic Measures for Control of Future Allergic Disease."

Dr. Jerome Glaser, Rochester, N. Y., read a paper on "The Use of ACTH and Cortisone in the Treatment of Bronchial Asthma and Eczema in Pediatric Practice."

Drs. Leon Unger, Albert H. Unger and A. Alvin Wolf, Chicago, presented a paper on "The Treatment and Results of Treatment of Bronchial Asthma in Children."

These three papers were discussed by Drs. George L. Waldbott, Detroit; Theron G. Randolph, Chicago; Morton Zall, Los Angeles, and M. Murray Peshkin, New York.

FRIDAY, JUNE 15—AFTERNOON

Dr. Jay M. Arena, Durham, N. C., read a paper on "Household Poisoning in Children."

Dr. Philip M. Stimson, New York, read a paper on "Treatment of Acute Poliomyelitis," which was discussed by Dr. Horace L. Hodes, New York.

Dr. Arild E. Hansen, Galveston, Texas, read a paper on "The New Challenge for Early Diagnosis in Acute Rheumatic Fever." This paper was discussed by Drs. William Weston Jr., Columbia, S. C., and George M. Wheatley, New York.

Dr. Samuel Livingston, Baltimore, read a paper on "The Medical Management of Epilepsy," which was discussed by Dr. H. M. Keith, Rochester, Minn.

Drs. Charles U. Lowe and Charles D. May, Minneapolis, presented a paper on "The Treatment of Chronic Idiopathic Intestinal Insufficiency (Celiac Disease)." This paper was discussed by Drs. L. Emmett Holt Jr., and Merrill P. Haas, New York, and Charles U. Lowe, Minneapolis.

Dr. Walter Finke, Rochester, N. Y., read a paper on "Childhood Pneumonia: A Common Cause of Bronchopulmonary Disease," which was discussed by Dr. Camille D. Cayley, New York.

SECTION ON PHYSICAL MEDICINE AND REHABILITATION

WEDNESDAY, JUNE 13—MORNING

The meeting was called to order at 9:15 a. m. by the chairman, Dr. George Morris Piersol, Philadelphia.

A paper entitled "Treatment of Some Complications of Colles' Fracture" was presented by Drs. Miland E. Knapp and Myron D. Lecklitner, Minneapolis.

Dr. Jessie Wright, Pittsburgh, read a paper on "Protective Body Mechanics in Arthritis," which was discussed by Dr. Edward E. Gordon, New York.

A paper on "Physical Medicine Plus Cortisone for Rheumatoid Arthritis,"was presented by Drs. Gordon M. Martin, Howard F. Polley and Thomas P. Anderson, Rochester, Minn., and was discussed by Dr. Walter M. Solomon, Cleveland.

Drs. Edward E. Gordon and Karl E. Carlson, New York, presented a paper on "Changing Attitudes Toward Multiple Sclerosis: A Program of Management." This paper was discussed by Drs. Howard A. Rusk, New York, and Frank H. Clark, Cleveland.

A paper on "Physical Medicine and Rehabilitation: Dynamic Therapy in Chronic Illness," was read by Dr. A. B. C. Knudson, Washington, D. C., and was discussed by Dr. Sydney S. Norwick, San Francisco.

Dr. Daniel Dancik, Northport, N. Y., read a paper on "Physical Medicine and Rehabilitation: Its Contribution and Role in a Large Psychiatric Hospital."

THURSDAY, JUNE 14—MORNING

Dr. George Morris Piersol, Philadelphia, read the chairman's address, entitled "The Present Obligation of Physical Medicine and Rehabilitation."

Dr. William Bierman, New York, read a paper on "Bell's Palsy," which was discussed by Drs. Sedgwick Mead, St. Louis; Ferdinand F. Schwartz, Birmingham, Ala.; Samuel Feuer, Brooklyn; Samuel J. Rosen, Pittsburgh; Frank R. Ober, Boston, and Madge C. McGuinness, New York.

Drs. John H. Kuitert and Raoul C. Psaki, Washington, D. C., presented a paper on "Common Diseases and Disabilities of the Hand," which was discussed by Dr. Herman Baezy, Dayton, Ohio.

Dr. Donald L. Rose, Kansas City, Kans., read a paper on "Rehabilitation of Hand Function in Rheumatoid Arthritis."

Dr. H. Worley Kendell, Chicago, presented a paper on "The Prevention and Correction of Deformities in Rheumatoid Arthritis with Assistive Devices."

The last two papers were discussed by Drs. David H. Kling, Los Angeles; Madge C. McGuinness, New York, and Frank H. Clark, Cleveland.

FRIDAY, JUNE 15—MORNING

Dr. Arthur L. Watkins, Boston, read a paper entitled "Practical Applications of Progressive Resistance Exercises."

Dr. Herman Schwan, Philadelphia, read a paper entitled "Limitations of Ultrasonics in Medicine."

Dr. M. A. Perlstein, Chicago, read a paper entitled "Some Clinical Aspects of Cerebral Palsy."

Dr. Henry H. Kessler, Newark, N. J., read a paper entitled "Rehabilitation of the Amputee."

Dr. Robert L. Bennett, Warm Springs, Ga., read a paper entitled "Functional Apparatus for Severely Weakened Upper Extremities."

A paper entitled "Bracing of Soft Tissue Disabilities of the Upper Extremity" was presented by Drs. Charles D. Shields and E. M. Smith, Washington, D. C., and was discussed by Drs. Gerald G. Hirschberg, New York, and Charles D. Shields, Washington, D. C.

SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

WEDNESDAY, JUNE 13—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Rutherford T. Johnstone, Los Angeles.

Dr. Rutherford T. Johnstone read his chairman's address entitled "Medicine: A Critique with No Tongue in Cheek."

The following papers were read as a symposium on "Occupational Health of Medical Personnel":

"Laboratory Infections," by Dr. S. Edward Sulkin, Dallas, Texas.

"Tuberculosis in Nurses and Medical Students," by Dr. H. D. Lees, Philadelphia.

"Professional Dermatitis," by Dr. Ervin H. Epstein, Oakland, Calif.

"Occupational Diseases of Dentists," by Dr. F. J. Orland, Chicago.

"Radiation Exposure in Atomic Medicine Nursing," by Dr. Marshall H. Brucer, Oak Ridge, Tenn.

"Diseases Acquired by Veterinary Surgeons," by Dr. R. C. Klussendorf, Terre Haute, Ind.

These six papers were discussed by Drs. Louis I. Dublin, New York, and Seward E. Miller, Washington, D. C.

THURSDAY, JUNE 14—MORNING

The following papers were read as a symposium on "Aging":

"Orientation in Problems of Aging," by Dr. Robert A. Moore, St. Louis.

"Psychiatric Aspects of Aging," by Dr. Leonard E. Himler, Ann Arbor, Mich.

"Public Health and Statistical Aspects of Aging," by Dr. Clarence J. Velz, Ann Arbor, Mich.

"Industrial Medical Aspects of Aging," by Dr. S. Charles Franco, New York.

"Sociological Aspects of Aging," by Miss Ollie A. Randall, New York.

"Training for Retirement of the Aged," by Dr. Phil N. Scheid, Chicago.

These six papers and remarks by Dr. Theodore G. Klumpp, moderator, were discussed by Drs. Harold W. Lovell, New

York; Clark Tibbitts, Washington, D. C.; O. L. Friedman, New York; I. J. Brightman, Albany, N. Y., and Daniel Blain, Washington, D. C.

Dr. Leon Pordy, New York, presented a paper on "The Value of Cardiac Function Tests in Industry." This paper was discussed by Dr. Morris E. Missal, Rochester, N. Y.; Dr. S. Charles Franco, New York, and Dr. Pordy.

The following officers were elected: chairman, Dr. Carey P. McCord, Detroit; vice chairman, Dr. Vlado A. Getting, Boston; secretary, Dr. Jean S. Felton, Oak Ridge, Tenn.; delegate, Dr. Rutherford T. Johnstone, Los Angeles; representative to Scientific Exhibit, Dr. Paul A. Davis, Akron, Ohio.

Friday, June 15—Morning

The following papers were read as a symposium on "A Critical Evaluation of Public Health Programs" with Dr. Herman E. Hilleboe, Albany, N. Y., as moderator:

"Venereal Disease Control," by Dr. John J. Wright, Chapel Hill, N. C.

"Nutrition," by Dr. Norman Jolliffe, New York.

"Tuberculosis Case Finding and Control," by Dr. W. C. Spring Jr., Ithaca, N. Y.

"Cancer Case Finding and Control," by Dr. N. E. McKinnon, Toronto, Canada.

"Responsibilities in Hospital Construction," by Dr. Robin C. Buerki, Philadelphia.

These papers were discussed by Drs. Theodore H. Noehren, Salt Lake City; Henry A. Holle, New York, and I. J. Brightman, Albany, N. Y.

SECTION ON RADIOLOGY

Wednesday, June 13—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. J. C. Dickinson, Tampa, Fla.

The secretary, Dr. Paul C. Hodges, Chicago, read the report of the delegate to the House of Delegates, embodying a resolution relative to the use of radium and radio-isotopes in hospitals. On motion regularly made and seconded, the resolution was adopted.

Dr. J. C. Dickinson, Tampa, Fla., read the chairman's address, "The General Practice of Radiology."

Dr. Ross Golden, New York, read a paper on "Functional Obstruction of the Efferent Loop of the Jejunum Following Partial Gastrectomy."

Drs. James F. Martin, Winston-Salem, N. C., and Hymer L. Friedell, Cleveland, presented a paper on "Partial Obstruction of the Small Bowel with Special Reference to the Obstructing Segment."

Drs. Everett L. Pirkey, Edsell S. Reed, William H. Smith and Gabriel Whiteman, Louisville, Ky., presented a paper on "The 'Profile Line' in the Differential Diagnosis of Intrinsic and Extrinsic Lesions of the Gastric Cardia."

Drs. Gladden V. Elliott and Hugh M. Wilson, St. Louis, presented a paper on "Mesenchymal Tumors of the Stomach."

Drs. Fred J. Hodges and Howard C. MacMillan, Ann Arbor, Mich., presented a paper on "Important Clinical Dividends from X-Ray Examinations of the Colon."

These papers were discussed by Drs. Fred J. Hodges, Ann Arbor, Mich.; Paul C. Swenson, Philadelphia, and Walter F. Gruber, New York.

Thursday, June 14—Afternoon

The following officers were elected: chairman, Dr. Ira H. Lockwood, Kansas City, Mo.; vice chairman, Dr. Paul C. Hodges, Chicago; secretary, Dr. Traian Leucutia, Detroit; representative to the Scientific Exhibit, Dr. Richard H. Chamberlain, Philadelphia.

Drs. C. F. Behrens, D. P. Jackson, E. P. Cronkite and J. G. Jacobs, Bethesda, Md., presented a paper on "Evaluation of the Platelet Role in the Hemorrhagic Phase of Radiation Injury."

Dr. Milton Friedman, New York, read a paper on "Seminoma of the Testis."

Dr. William Harris, New York, read a paper on "Use of a Grid in Roentgen Therapy for Advanced Cancer."

Drs. Ira I. Kaplan and Leslie L. Allen, New York, presented a paper on "Hodgkin's Disease: A Review of 242 Cases Treated in the Bellevue Hospital Radiation Therapy Department."

Drs. Roger A. Harvey, John S. Laughlin, Hugh Garrison and John R. Anderson, Chicago, presented a paper on "Comparison of Dose Distribution in Patients Treated with X-Ray Beams of Widely Different Energies."

Dr. Leonard B. Goldman, Jackson Heights, N. Y., read a paper on "Use of Lipids to Enhance the Effect of Roentgen Therapy in the Treatment of Pain from Advanced Cancer."

These papers were discussed by Drs. Hirsch Marks, and William Harris, New York, and Lester M. Freedman, Pittsburgh.

Friday, June 15—Afternoon

Dr. Rieva Rosh, New York, read a paper on "Irradiation of Recurrent and Residual Carcinoma of the Cervix After a Total and Subtotal Hysterectomy."

Drs. William B. Seaman and Alfred Goldman, St. Louis, presented a paper on "Roentgenographic Aspects of Pulmonary Arteriovenous Fistulas."

Drs. Edwin L. Lame and Hon Chong Chang, Philadelphia, presented a paper on "Pubic and Ischial Necrosis Following Pelvic Operation (Osteitis Pubis)."

Drs. Wallace S. Tirman and Harry W. Banker, Bluffton, Ind., presented a paper on "Microradiography."

Drs. Israel Steinberg and Charles T. Dotter, New York, presented a paper on "Lung Cancer: Diagnostic and Prognostic Value of Angiocardiography."

Drs. Laurence L. Robbins and Edwin H. Land, Boston, presented a paper on "The Application of the Land Method of Film Processing in Roentgenography."

These papers were discussed by Drs. Fred J. Hodges, Ann Arbor, Mich.; Paul C. Hodges, Chicago; Oscar V. Batson, Philadelphia, and Laurence Miscall, New York.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

Wednesday, June 13—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. I. S. Ravdin, Philadelphia.

Dr. William A. Altemeier, Cincinnati, presented a paper on "Enzymatic Debridement of Thermal Wounds," which was discussed by Drs. Edwin J. Pulaski, San Antonio, Texas, and Louis M. Rousselot, New York.

Drs. Raymond M. Curtis, John H. Brewer and Ira W. Rose Jr., Baltimore, presented a paper on "A New Technic for the Local Treatment of Burns." This paper was discussed by Drs. Walter E. Fleischer and Harvey B. Stone, Baltimore; Irving L. Ochs, Annapolis, Md.; Paul E. Spangler, Portsmouth, Va., and Frederick M. Allen, New York.

Dr. James Barrett Brown, St. Louis, presented a paper on "Rehabilitation of Patients with Deep Burns," which was discussed by Dr. Herbert Conway, New York.

Drs. Joseph M. Miller, Perrin H. Long and Edward S. Stafford, Baltimore, presented a paper on "Streptokinase and Streptodornase in the Treatment of Infected Wounds." This paper was discussed by Drs. W. Ross McCarty and Frank B. Berry, New York; Michael E. DeBakey, Houston, Texas, and Otto C. Brantigan, Baltimore.

Drs. D. Emerick Szilagyi, Rajka R. Margulis and Roy D. McClure, Detroit, presented a paper on "Pituitary Adrenocorticotropic Hormone (ACTH) and Cortisone in the Management of Postoperative Complications and Related Problems." This paper was discussed by Drs. David M. Hume, Boston, and Geza DeTakats, Chicago.

Drs. Stanley R. Friesen and William N. Harsha, Kansas City, Kans., presented a paper on "Massive Generalized Wound Bleeding During Operation with Clinical and Experimental Evidence of Blood Transfusion Reactions." This paper was discussed by Drs. Jonathan E. Rhoads, Philadelphia, and J. Garrott Allen, Chicago.

THURSDAY, JUNE 14—AFTERNOON

The following officers were elected: chairman, Dr. I. Mims Gage, New Orleans; vice chairman, Dr. R. K. Gilchrist, Chicago; secretary, Dr. I. Ridgeway Trimble, Baltimore; representative on the American Board of Surgery, Dr. John Waugh, Rochester, Minn.; representative to the Scientific Exhibit, Dr. Walter G. Maddock, Chicago; delegate, Dr. Grover C. Penberthy, Detroit; alternate, Dr. Isaac A. Bigger, Richmond, Va.

Dr. I. S. Ravdin, Philadelphia, presented the chairman's address, entitled "The Responsibility of the Surgeon to Modern Society."

Drs. Waltman Walters, James T. Priestley and Hiram H. Belding III, Rochester, Minn., presented a paper on "Vagotomy in the Treatment of Gastrojejunal Ulceration: A Postoperative Clinical and Laboratory Study (A Study of 103 Cases)." This paper was discussed by Drs. I. Ridgeway Trimble, Baltimore; Lester R. Dragstedt, Chicago; Sara M. Jordan, Boston, and Hyman I. Goldstein, Camden, N. J.

Drs. Owen H. Wangensteen and Thomas O. Murphy, Minneapolis, presented a paper on "Gastric Resection with Restoration of Anatomic Continuity for Peptic Ulcer." This paper was discussed by Drs. Ralph Colp, New York; Lester R. Dragstedt, Chicago, and Richard B. Cattell, Boston.

Dr. Henry G. Hollenberg, Little Rock, Ark., read a paper on "Bleeding from the Nipple," which was discussed by Drs. William T. Fitts Jr., Philadelphia, and John V. Goode, Dallas, Texas.

Drs. Thomas J. E. O'Neill, Robert P. Glover and Charles P. Bailey, Philadelphia, presented a paper on "Observations on the Surgical Treatment of Mitral Stenosis by Commisurotomy." This paper was discussed by Drs. George D. Geckeler, Philadelphia, and Claude S. Beck, Cleveland.

FRIDAY, JUNE 15—AFTERNOON

Drs. Robert M. Zollinger and Mary M. Martin, Columbus, Ohio, presented a paper on "Surgical Aspects of Hypersplenism." This paper was discussed by Dr. Louis M. Rousselot, New York.

Drs. Arthur H. Blakemore, Stanley E. Bradley, Hugh F. Fitzpatrick, Cheves M. Smythe and Samuel R. Powers Jr., New York, presented a paper on "Physiological Studies on the Portal System in Cases of Portal Hypertension Requiring a Portacaval Anastomosis." This paper was discussed by Drs. Robert R. Linton, Brookline, Mass., and Ralph A. Deterling, New York.

Dr. Richard B. Cattell, Boston, read a paper on "Factors Influencing Prognosis in Carcinoma of the Colon and Rectum," which was discussed by Drs. Harry J. Warthen, Richmond, Va., and Samuel McLanahan Jr., Baltimore.

Dr. Frank J. McGowan, New York, read a paper on "More Frequent Use of Anterior Resection in the Sigmoid Colon for Cases of Recurrent or Chronic Diverticulitis." This paper was discussed by Drs. Frank Glenn and Louis M. Rousselot, New York.

Drs. Harry E. Bacon, Philadelphia, and Lloyd F. Sherman, Minneapolis, presented a paper on "The Surgical Management of Anomalies of the Anus, Rectum and Sigmoid Colon," which was discussed by Dr. Monte Edwards, Baltimore.

Drs. Morris L. Parker and Gerald J. Menaker, Chicago, presented a paper on "Evaluation of Indications for Exploration of the Common Duct." This paper was discussed by Drs. Leo M. Zimmerman, Chicago, and Richard B. Cattell, Boston.

SECTION ON UROLOGY

WEDNESDAY, JUNE 13—MORNING

The meeting was called to order at 9:05 a. m. by the chairman, Dr. John Arthur Taylor, New York.

Dr. Oswald S. Lowsley, New York, read a paper entitled "Further Experiences with the Fat-Ribbongut Method of Repairing Kidney Wounds."

A paper entitled "Rupture of the Urethra at the Apex of the Prostate," was presented by Drs. John K. Ormond and Philip W. Fairey, Detroit.

These two papers were discussed by Drs. Albert E. Goldstein, Baltimore; George A. Fiedler, New York; Harold P. McDonald, Atlanta, Ga.; E. J. McCague, Pittsburgh; Oswald S. Lowsley, New York, and John K. Ormond, Detroit.

Dr. Robert B. McIver, Jacksonville, Fla., read a paper entitled "Surgery of the Fused Kidney."

A paper entitled "Nephrostomy Drainage with Ureteral Splint in Renal Surgery," was presented by Drs. H. Haynes Baird and Hamilton W. McKay, Charlotte, N. C.

A paper entitled "Infection in Urinary Tract Calculi: Incidence and Management," was presented by Drs. James C. Kimbrough and William H. Morse, Washington, D. C.

These three papers were discussed by Drs. David M. Davis, Philadelphia; Oswald S. Lowsley, New York; Henry K. Sangree, Philadelphia, and Harold P. McDonald, Atlanta, Ga., and Drs. McIver, McKay and Kimbrough.

A paper entitled "The Clinical Effect of Estrogen Therapy on Metastatic Lesions from Carcinoma of the Testis," was presented by Drs. Charles H. de T. Shivers and Herbert B. Axilrod, Atlantic City, N. J.

Dr. William P. Herbst, Washington, D. C., read a paper entitled "Metabolic Management of Advanced Prostatic Malignancy."

These two papers were discussed by Drs. Edward N. Cook, Rochester, Minn., and William A. Milner, Albany, N. Y., and Drs. Shivers and Herbst.

THURSDAY, JUNE 14—MORNING

The following officers were elected: chairman, Dr. John R. Hand, Portland, Ore.; vice chairman, Dr. Rex Van Duzen, Dallas, Texas; secretary, Dr. Earl E. Ewert, Boston; delegate, Dr. Jay J. Crane, Los Angeles; alternate, Dr. Rex Van Duzen, Dallas, Texas; representative to Scientific Exhibit, Dr. Roger W. Barnes, Los Angeles.

A paper entitled "Treatment of Benign Prostatic Hypertrophy: Evaluation of the Transurethral, Perineal and Retropubic Methods," was presented by Drs. Kent A. Alcorn and Marshall W. Alcorn, Bay City, Mich.

Dr. Willard E. Goodwin, Baltimore, read a paper entitled "Surgical Problems Encountered in Radical Prostatectomies After Previous Operation on the Prostate."

Dr. Vernon S. Dick, Boston, read a paper entitled "Unrecognized Prostatism."

These three papers were discussed by Drs. Lowrain E. McCrea, Philadelphia; Samuel A. Vest, Charlottesville, Va.; Charles A. W. Uhle, Philadelphia; Roger W. Barnes, Los Angeles; Albert E. Goldstein, Baltimore; John K. Ormond, Detroit; John L. Emmett, Rochester, Minn.; Jay J. Crane, Los Angeles; Ralph Hathaway Jenkins, New Haven, Conn.; Marshall W. Alcorn, Bay City, Mich.; Willard E. Goodwin, Baltimore, and Vernon S. Dick, Boston.

A paper entitled "Atrophic Pyelonephritis vs. Congenital Hypoplasia," was presented by Drs. John L. Emmett, J. J. Alvarez and John R. McDonald, Rochester, Minn.

A paper entitled "A Classification of Uremia and Differential Diagnosis of the Causes of Uremia," was presented by Drs. Roger W. Barnes, Walter E. Macpherson, R. Theodore Bergman and Gordon Hadley, Los Angeles.

These two papers were discussed by Drs. William J. Engel, Cleveland; Edward H. Ray, Lexington, Ky.; Samuel E. Kramer, Perth Amboy, N. J.; John L. Emmett, Rochester, Minn., and Roger W. Barnes, Los Angeles.

Dr. Jay J. Crane, delegate, gave a short report on the activities of the House of Delegates.

Dr. C. D. Creevy, Minneapolis, read a paper entitled "Some Factors in Absorption After Ureterosigmoidostomy."

Dr. Walter M. Kearns, Milwaukee, read a paper entitled "Ureteral Intestinal Anastomosis."

These two papers were discussed by Drs. Clarence G. Bandler, New York; James C. Kimbrough, Washington, D. C.; C. D. Creevy, Minneapolis, and Walter M. Kearns, Milwaukee.

FRIDAY, JUNE 15—MORNING

A joint meeting was held with the Section on Anesthesiology. The proceedings are reported in the minutes of that section.

MEDICAL NEWS

CALIFORNIA

Society News.—New officers of the Los Angeles Obstetrical and Gynecological Society are Dr. Gordon Rosenblum, president, and Dr. Aaron N. Webb, secretary-treasurer.

State Medical Election.—The California Medical Association at its meeting May 13-16 installed Dr. H. Gordon MacLean, Oakland, as president and chose Dr. Lewis A. Alesen, Los Angeles, president-elect, and Dr. Donald A. Charnock, Los Angeles, speaker of the house of delegates.

ILLINOIS

University Appointment.—Dr. George G. Jackson, Boston, has been appointed assistant professor of preventive medicine at the University of Illinois College of Medicine. Dr. Jackson held joint appointments as Milton fellow in medicine at Harvard, research fellow at the Thorndike Memorial Laboratory, and assistant in medicine at Boston City Hospital.

Chicago

New Biochemistry Department.—The departments of chemistry and experimental medicine at Northwestern University Medical School are being combined into the department of biochemistry. Dr. Smith Freeman, who has been professor and chairman of the department of experimental medicine, has been named chairman of the newly established department.

Northwestern Names Abbott Professors.—Abbott Professors for the academic year 1951-52 at Northwestern University's Medical School are Dr. Carl A. Dragstedt, professor and chairman of the department of pharmacology; Henry B. Bull, Ph.D., professor in the department of chemistry; Fred S. Grodins, Ph.D., professor in the department of physiology, and Dr. E. Albert Zeller, associate professor in the department of chemistry. The four men will engage in medical research made possible by a $1,500,000 gift Northwestern received in 1939 from the estate of the late Clara A. Abbott, widow of Dr. Wallace C. Abbott.

Personals.—Dr. Jules H. Masserman, associate professor of nervous and mental diseases at Northwestern University and scientific director of the National Foundation for Psychiatric Research, has been appointed consultant to the secretariat of the United Nations and designated by the World Health Organization to present a series of lectures at universities throughout Europe and Scandinavia in October and November. Dr. Masserman will also address the British Royal Society.——Dr. Ole C. Nelson, medical director of Cook County Hospital, was guest of honor at a dinner June 13 marking the 41st year of his employment at the hospital. Dr. Nelson has been medical director since December 1943.

KANSAS

State Medical Election.—At the annual meeting of the Kansas Medical Society in Topeka, May 14-17, Dr. Clarence H. Benage, Pittsburg, was installed as president. Elected officers include Dr. Warren F. Bernstorf, Winfield, president-elect; Dr. John L. Lattimore, Topeka, treasurer, and Dr. John M. Porter, Concordia, delegate to the American Medical Association 1952-1954, with Dr. Peter E. Hiebert, Kansas City, as alternate.

MASSACHUSETTS

New Home Care Program.—Massachusetts General Hospital is to begin a new home care program to carry the services of the institution to needy families in the surrounding area. The plan, which is part of a 10-year program for improvement of basic care, teaching, and research, is expected to make better supervision of treatment possible and "make unnecessary many admissions to the hospital and permit patients to go home much earlier."

MICHIGAN

Dr. Deyton to Direct Multiple Sclerosis Center.—Dr. John W. Deyton, Detroit, has been appointed medical director of the Detroit Multiple Sclerosis Center, Detroit Memorial Hospital, succeeding Dr. Abe S. Goldstein, who has gone into private practice but will continue as consultant at the center. It is reported that thus far 370 of the state's estimated 4,000 sclerosis victims have been examined at the center.

Dr. Foster Made Emeritus Professor.—Dr. Linus J. Foster, who is retiring from active teaching this summer after 25 years at the Wayne University College of Medicine, Detroit, has been made emeritus professor of clinical neurology and psychiatry. Dr. Foster joined the college of medicine staff as an instructor in clinical neurology and psychiatry in 1926. He was promoted to assistant professor in 1931 and to professor in 1936.

MISSOURI

Dr. Proetz Receives Award.—Dr. Arthur W. Proetz, St. Louis, was recently awarded the De Roaldes gold medal of the American Laryngological Association. The award, made only six times previously since its establishment in 1907, is made "in special recognition of merit and achievement in teaching, authorship, and research." Dr. Proetz is professor of clinical otolaryngology at Washington University School of Medicine, is author of "Physiology of the Nose," and has written chapters and sections in numerous textbooks and monographs.

Gift of Roentgenograms for Teaching.—Dr. LeRoy Sante, professor of radiology at St. Louis University School of Medicine, has presented the school with some 1,500 miniature roentgenographs to be used in teaching the principles of roentgenologic interpretation. Selected x-rays from those compiled over 35 years of practice were reduced in size and filed in proper sequence, so that it is now possible to show students the original roentgenograms of a case and follow an illness to completion through the changes which occurred. Dr. Sante estimates it took most of his spare time over a period of two or three years to edit the series, sort it, and place the films in the order in which they should be used.

NEW YORK

Dr. Willard Named Dean at Syracuse.—Dr. William Robert Willard, formerly associate professor of public health and assistant dean in charge of postgraduate medical education at the Yale University School of Medicine has been appointed dean of New York State University College of Medicine at Syracuse. This position was vacated by the resignation of Dr. Herman G. Weiskotten, who has served the college as dean for 25 years. Dr. Willard was graduated cum laude from Yale with the M.D. degree in 1934 and the doctor of public health degree three years later. He interned at Johns Hopkins Hospital. Following a period as deputy state and county health officer in Maryland, he was surgeon in the U. S. Public Health Service. With the U. S. Army he was assigned to malaria control work.

Symposium on Pediatrics.—This symposium is being presented before the Suffolk County Medical Society on July 25 at 10 a. m. in the Central Islip State Hospital in Central Islip. Speakers include:

Horace L. Hodes, Manhasset, Common Forms of Meningitis.
Bernard Benjamin, Brooklyn, Changing Concepts in Fluid Therapy in Pediatrics.
Thomas V. Santulli, New York, Common Pediatric Abdominal Surgery.

The symposium is part of the postgraduate instruction arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

OHIO

Andrus Premedical Scholarship at Oberlin.—The establishment of a permanent premedical scholarship at Oberlin College in honor of the late Dr. William DeWitt Andrus, New York surgeon, was announced June 14. The scholarship, created by individual gifts from about 275 former patients, friends, and relatives of Dr. Andrus, will be awarded every two years to a second semester sophomore taking premedical work at Oberlin. Income from the scholarship endowment will assure, at the minimum, tuition for his junior and senior years. About 15% of the men in each sophomore class plan medical careers. Selection of the first Andrus Scholar will be made this spring by the Oberlin Men's Scholarship Committee with the assistance of premedical advisors. The scholar will be chosen on the basis of scholastic ability, aptitude for a career in medicine, character and citizenship, and financial need. Dr. Andrus took his premedical work at Oberlin College, and at the time of his death last Jan. 20 he was attending surgeon at the New York Hospital and professor of clinical surgery in Cornell University Medical College.

OKLAHOMA

Narcotic Violations.—Dr. Cosby Elwood Ford, Taft, on April 20 pleaded guilty to a violation of the federal narcotic law in the United States District Court at Muskogee. His sentence of 18 months was suspended, and he was placed on probation for three years and fined $300.

Dr. J. Walter Beyer, Tulsa, pleaded guilty to a violation of the federal narcotic law in the United States District Court at Tulsa, and on May 8 was sentenced to serve a term of two years.

PENNSYLVANIA

Heart Association Clinic.—The heart clinic, which was opened at the Pottsville Mission in Pottsville on June 14, will be open every Thursday morning to patients referred by their family physicians. It is being operated by Dr. Norman M. Wall and Dr. Joseph C. Koch, local physicians. The heart association will provide the services of specialists from metropolitan areas when such examination and treatment becomes necessary. Results of the examination at the clinic will be referred to the family physician.

Philadelphia

Dr. Griffith Honored.—Ivor Griffith, Ph.D., who has just completed his 10th year as president of the Philadelphia College of Pharmacy and Science, was honored at the annual spring alumni reunion dinner of the college May 24. A tooled testimonial book and a doctor's cap and gown were among the presentations made to Dr. Griffith.

Laennec Society Prize.—The Laennec Society of Philadelphia will award a prize of $200 for the best paper submitted in any field related to diseases of the chest. This prize is open to undergraduates, interns, residents, or fellows throughout the United States. The work should be original and not a review of the literature or previous contributions. The society requests that the prize-winning paper be presented at one of its regular scientific meetings. Five copies of the manuscript should be submitted, double-spaced with wide margins, to Dr. Katharine R. Boucot, 311 S. Juniper St., Philadelphia 7, by Oct. 1.

New Aero-Medical Laboratory.—Dr. Robert F. Rushmer, of the University of Washington, Seattle, has been appointed superintendent of the scientific department of the Aviation Medical Acceleration Laboratory of the U. S. Navy, located at Johnsville, Pa. The appointment was made in accordance with an agreement signed by Harold E. Stassen, president of the University of Pennsylvania, and Captain Selden B. Spangler, whereby the university and the U. S. Naval Air Development Center have become affiliated. Personnel of the two institutions and the faculty of the university school of medicine will cooperate with the commander of NADC in the selection of personnel for the laboratory of the center. Dr. Rushmer has also been appointed professor of applied physiology on the faculty of the university's school of medicine; other appointees at the laboratory will receive appropriate faculty appointments in the university. One of the main functions of the new laboratory will be the study of man's reactions to acceleration under conditions resembling stress patterns encountered in air combat. It has been designed as a complete aero-medical laboratory well equipped for work in physiology, animal surgery, radioactivity, biophysics, biochemistry, gas analysis, pathology and electronics, and it also has a medical library, conference rooms, and service and fabrication shops. From 1940 to 1942 Dr. Rushmer was a fellow at the Mayo Clinic, Rochester, Minn., and in 1941 was appointed an assistant in aviation medicine. He served as a research projects officer, department of clinical investigation, with the School of Aviation at Randolph Field, Texas, from 1942 to 1946 inclusive. After the war Dr. Rushmer joined the medical faculty at the University of Southern California School of Medicine, Los Angeles, as an associate professor of aviation medicine and in 1947 went to the University of Washington to serve in the same field of activities.

SOUTH DAKOTA

State Medical Election.—At the annual meeting of the South Dakota State Medical Association in Aberdeen, June 2-6, Dr. David A. Gregory, Milbank, was installed as president. Elected officers include Dr. Roy E. Jernstrom, Rapid City, president-elect; Dr. Roland G. Mayer, Aberdeen, vice president; Dr. Louis J. Pankow, Sioux Falls, secretary-treasurer, and Dr. Alonzo P. Peeke, Volga, speaker of the house. The association's first annual award to the outstanding doctor in South Dakota was given to Dr. Theodore F. Riggs of Pierre.

TENNESSEE

Women Aid Children's Hospital.—A group of women from four counties in middle Tennessee, members of the Hospital Children's Aid League, are serving the Emerald-Hodgson Hospital in Sewanee, where last year 68% of the services extended to children were free. The Children's Aid League was formed in response to the need for furnishings for the linen closet for the children's wing then under construction. In a drive designed to raise $1,000, these women raised $4,500. This year's project was the Surprise Shop, at Winchester, where contributions ranging from frying pans to chandeliers were collected from here and there and sold to aid the Children's Fund. Officers of the League are Mrs. Kirby-Smith, Sewanee, chairman; Mrs. Blevins Rittenberry, Cowan, secretary, and Mrs. Bob Winton, Decherd, treasurer. The Emerald-Hodgson Hospital is located on property of the University of the South and is owned and operated by the university and the Episcopal Church.

TEXAS

State Medical Election.—At the annual meeting of the State Medical Association of Texas in Galveston, April 29-May 2, Dr. William M. Gambrell, Austin, was installed as president. Elected officers include Dr. Truman C. Terrell, Fort Worth, president-elect; Dr. Samuel N. Key, Austin, secretary, and Dr. Robert B. Homan Jr., El Paso, speaker of the house of delegates.

WEST VIRGINIA

Psychiatric Bulletin.—A new quarterly publication is being sponsored by the bureau of mental health of the state department of health. The publication, known as *The Psychiatric Bulletin*, will be circulated throughout the state to doctors, libraries, hospitals, industrial plants, and county and district health departments. The initial issue will be distributed in July.

WISCONSIN

Training for School Physicians.—During the week of June 11-15, Dr. Mary P. Warner, pediatric consultant of the Washington County Health Department, Maryland, held an in-staff training seminar for school physicians in Milwaukee at the invitation of the Milwaukee Health Department. Other participants in the seminar were Dr. Max E. Wiese, Milwaukee, Dr. Margaret E. Hatfield, Milwaukee, and Dr. Virginia S. Downes, Jackson, Miss. Discussions of school health programs lead by Dr. Warner were also held with the nursing staff and dental staff of the Milwaukee Health Department and with members of the Milwaukee School Board.

GENERAL

Society Election.—At its recent meeting the American Ophthalmological Society elected the following officers for 1951-52: Dr. Lawrence T. Post, St. Louis, president; Dr. Conrad Berens, New York, vice president; Dr. Maynard C. Wheeler, New York, secretary-treasurer, and Dr. Gordon M. Bruce, New York, editor.

Dr. Alvarez Awarded Medal.—Dr. Walter C. Alvarez, Chicago, recently was awarded the 1951 Friedenwald Medal, an award given annually to one of the senior members of the American Gastroenterological Association for outstanding work and distinguished service in the field of gastroenterology. The medal was presented to Dr. Alvarez at the annual scientific session of the association which was held in June in Atlantic City.

Dermatological Association Prizes.—In the annual essay contest sponsored by the American Dermatological Association to stimulate younger investigators to original work, Dr. Thomas B. Fitzpatrick, Rochester, Minn., won first place with his thesis, "The Tyrosinase Reaction as a Specific Index of Malignance of Pigment Cell Neoplasms, with Particular Reference to Malignant Melanoma." He presented his essay at the association meeting in Hot Springs, Va., in May and received a cash award of $300. Honorable mention was awarded to Dr. S. William Becker Jr., Rochester, Minn., for his paper on "The Dendritic Cell of the Epidermis" and to Dr. Joseph W. Goldzieher, New York, for his paper on "'Chemical' Analysis of the Intact Skin by Reflectance Spectrophotometry."

Outbreaks of Diphtheria.—The Maine Department of Health and Welfare reports an outbreak of 10 diphtheria cases in a state hospital. The first case was that of an attendant. Since May 6, two other attendants and seven patients have had diphtheria, with the outcome of one case (a patient aged 65) being fatal. Dr. Wilton L. Halverson, California State Department of Public Health, supplements a previous report of diphtheria in one of the northern counties. During May, 10 cases were reported. Two of the patients were nurses aides (aged 21 and 48 years) who had had contact with two diphtheria patients before the diagnosis of diphtheria was established. One patient was a hospital janitor (aged 69 years), and two others were ward patients (aged 82 and 86 years) in this hospital.

Dr. Edwin Jordan Appointed Executive Director.—The American Association of Medical Clinics has appointed Dr. Edwin P. Jordan as its executive director. Dr. Jordan was for several years previous to 1947 an associate editor of THE JOURNAL. From 1947 to 1950 he was director of education of the Frank E. Bunts Educational Institute and the Cleveland Clinic Foundation. Among his new duties will be the development of a program of graduate medical education in private medical clinics equipped for such activity. The American Association of Medical Clinics was formed in 1949 and recently had 62 member clinics representing about 1,500 physicians. Officers elected at the December meeting are Drs. Wallace M. Yater, Washington, D. C., president; Clair L. Stealy, San Diego, Calif., vice president, and Arthur H. Griep, Evansville, Ind., secretary-treasurer.

Death Rates Decline in Many Countries.—Extensive application of the recent advances in medicine has improved health conditions throughout the world, Metropolitan Life Insurance Company statisticians report. A comparison of death rates just before and after World War II shows that in each of 19 countries in both hemispheres the rate has declined by more than 8%, and in nine of these countries it has dropped 20% or more. In Japan the death rate fell by 30%, largely as the result of public health measures instituted by the American army of occupation. In Ceylon an anti-malaria campaign was an important factor in lowering the death rate during the postwar years, and in India the death rate has declined by about one fifth between the prewar and postwar years. Declines were also registered in Puerto Rico, Mexico, Costa Rica, Chile, and Venezuela. England and Wales experienced a mortality decline of 27%, and the United States a decline of 23%. Recent declines in mortality in the Western nations are credited in large measure to control of infectious diseases by means of chemotherapy and antibiotics.

Considers Health Program for Europe.—Guiding principles for international health programs directed in Europe by the World Health Organization were outlined by WHO's consultative committee for Europe at its first session in Geneva May 28-29. WHO's program on the continent is based on the principle that, in general, Europe is a developed area where health demonstration services are not so important as some other types of aid. For this reason the committee recommended that WHO stimulate health activities, coordinate health policies regarding problems shared by European countries, and exchange information and experience. Specific programs were recommended in the fields of housing, noninfectious chronic diseases of the adult population, dental hygiene, nutrition, regular health examination of the population, rehabilitation of tuberculous patients, and regional technical discussions. The committee recommended continuation of group projects as well as individual fellowships, especially in public health administration, mental hygiene, and other fields of major importance in Europe. Another session of the committee will be held at Geneva in the autumn to draft concrete proposals for the 1953 program.

Diabetes Victims Warned of Dangerous Remedy.—The known diabetics of the United States were warned July 5 that a diabetic remedy that is being mailed from Mexico is worthless and extremely dangerous if employed as a substitute for insulin. The U. S. Food and Drug Administration, with the cooperation of customs and postal authorities, has been able to prevent delivery of about 20 individual packages of the nostrum, which is advertised and labeled as "Cacalia Composita, Mexican Indian Root." It is being offered by the "Mexican Indian Root Co., Mexico City." Circulars give the name of "Dr. Miguel C. Martinez, general manager."

Advertisements for the remedy have been appearing in newspapers and magazines throughout the country. Cities where the advertisements are known to have been published are San Francisco, Sacramento, Cal., New York, Cincinnati, Detroit, Pittsburgh, Philadelphia, Uniontown, Pa., and Bridgeport, Conn. Direct mail advertising is also being used to promote the remedy. FDA officials said the mailings were heavy in the Vermont area, but the packages which were denied entry were addressed to all sections of the country. The remedy has been priced at $15 and $25, cash in advance.

Atlantic City Golf Awards.—Dr. Frank H. Lahey, Boston, assumed the presidency of the American Medical Golfing Association at the close of the recent Seaview Tournament in Atlantic City, N. J. Dr. Thomas A. Kyner, Kansas City, Mo., was chosen as the president-elect, Dr. Eugene P. Pendergrass, Philadelphia, first vice president, and Robert W. Elwell, Delanco, N. J., secretary-treasurer. The 36th annual meeting of the AMGA will be held in Chicago next June on the first Monday of the 1952 AMA annual meeting.

Dr. Vincent W. Guidice, Ridgewood, N. J., won the low gross championship for 18 holes and was presented the Golden State trophy. Dr. Harold T. Sargis, Cleveland, took the 36 hole gross title, winning the Will Walter trophy. Other trophy awards to the 264 medical golfers participating went to Dr. Gerald F. Dederick Jr., Oradell, N. J., the Detroit trophy as runner up for the 36 hole championship; Dr. Lewis R. Wolf, Philadelphia, the Ben Thomas trophy as the runner up in the 18 hole event; Dr. Edward J. Kempf, Wading River, N. Y., the St. Louis trophy for the best net 36 holes; and Dr. Gilbert M. Bayne, Glen Olden, Pa., the President's trophy for the best net score for the first flight of 18 holes. For the fifth time Dr. David H. Houston, Seattle, was the winner of the Wendell Phillips trophy for the best low net 18 holes among the past presidents of the AMGA.

CORRECTION

Course in Exfoliative Cytology (Cancer Detection).—The Office of the Dean of Cornell University Medical College, New York, points out that the postgraduate course, third from the top on page 584 of THE JOURNAL, June 9, 1951, should have been listed under "Malignant Disease" rather than under "Dermatology and Syphilology." This course will be repeated again beginning March 3, 1952.

Regulations for Diathermy Equipment.—In the item "Regulations for Diathermy Equipment" in THE JOURNAL June 2, 1951 (page 481), the channel frequency assignments were given as 13.66, 27.33, and 40.98 megacycles. These frequencies have been changed by the Federal Communications Commission to 13,560 kilocycles plus or minus 6.78 kilocycles; 27,120 kilocycles plus or minus 160 kilocycles, and 40,680 kilocycles plus or minus 20 kilocycles. From a therapeutic standpoint, these changes are of no consequence.

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AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* July 20. Given simultaneously in several cities in the United States. Final date for filing application was Jan. 20. *Oral.* Memphis, Oct. 14-17. *Written.* July 18, 1952, Various locations. Final date for filing applications is Jan. 18, 1952. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various centers, Oct. 15. Final date for filing applications was May 1. *Oral.* The schedule of oral examinations for 1951 has been arranged on a regional basis as follows: New York, date to be announced, covering Maine, Massachusetts, New Hampshire, New York and Vermont. San Francisco, date to be announced, covering Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah and Washington.
Only candidates who have not taken an oral examination can be admitted under the schedule arranged thus far.
Closing dates for the filing of applications for examinations in New York and San Francisco to be announced.
Oral examinations in the subspecialties will be held at the same time and place and on the same distribution.
Exec. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, Oct. 25-26. *Oral* Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan. 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Feb. 1, 1952. Final date for filing applications is Nov. 1. *Oral.* Chicago, June 7-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Paul Titus, 1015 Highland Building, Pittsburgh 6, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Oral.* Chicago, October 8-13. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Final date for filing applications for the 1952 Part II examinations is Aug. 15, 1951. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 8-12. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Buffalo, Oct. 26-28. Ex. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Written.* San Francisco, October 28. *Oral.* San Francisco, October 29. Sec., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: Philadelphia, Nov. 17-18. Sec.-Gen., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Washington, D. C., Sept. 17-22. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various centers, Oct. 1951. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

BOARD OF THORACIC SURGERY: *Written.* Various parts of the country. Sept. 14, 1951. Final date for filing applications is July 15. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2, Mich.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-13, 1952. Final date for filing applications is Sept. 1. Sec., Dr. Harry Culver, 314 Corn Exchange Bldg., Minneapolis 15.

MEETINGS

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS, The Homestead, Hot Springs, Va., Sept. 6-8. Dr. William F. Mengert, 2211 Oak Lawn Ave., Dallas, Texas, Secretary.

AMERICAN CONGRESS OF PHYSICAL MEDICINE, Shirley-Savoy Hotel, Denver, Sept. 4-8. Dr. Walter J. Zeiter, 2020 E. 93d St., Cleveland 6, Executive Director.

NATIONAL MEDICAL ASSOCIATION, Philadelphia, Aug. 20-24. Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va., General Secretary.

POST GRADUATE MEDICAL ASSEMBLY OF SOUTH TEXAS, Shamrock Hotel, Houston, Texas, July 23-25. Mrs. W. H. Dahme, 229 Medical Arts Bldg., Houston, Executive Secretary.

RENO SURGICAL SOCIETY CONFERENCE, Riverside Hotel, Reno, Nev., Aug. 23-25. Dr. Olin C. Moulton, 130 N. Virginia St., Reno, Nev., Chairman.

ROCKY MOUNTAIN RADIOLOGICAL SOCIETY, Denver, Aug. 9-11. Dr. Maurice D. Frazer, 1037 Stuart Building, Lincoln, Nebr., Secretary.

WEST VIRGINIA STATE MEDICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, July 19-21. Mr. Charles Lively, 1031 Quarrier St., Charleston 24, Executive Secretary.

INTERNATIONAL

ASSOCIATION INTERNATIONALE DE PSYCHOTECHNIQUE, Gothenburg, Sweden, July 24-28. Dr. Franziska Baumgarten-Tramer, Thunstrasse 35, Berne, Switzerland.

EUROPEAN CONGRESS ON RHEUMATISM, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edström, Sweden, Secretary.

GENERAL PRACTITIONERS STUDY CLUB INTERNATIONAL, Rome, Italy, Sept. 12-15. Dr. John O'Connell, 10300 Lackland Road, St. Louis 14, Mo., U. S. A., President.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

INTERNATIONAL ASSOCIATION OF ALLERGISTS, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

INTERNATIONAL CONGRESS OF ANESTHESIOLOGY, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept 20-22. 12 rue de Seine, Paris 6e, France, Secretariat.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

INTERNATIONAL CONGRESS ON INDUSTRIAL MEDICINE, Instituto Superior Técnico, Lisbon, Portugal, Sept. 9-15. Dr. Luis Guerreiro, Instituto Nacional do Trabalho e Previdência, Praça do Comercio, Lisbon, Secretary General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19. Mrs. Grace E. O'Neill, Division of World Affairs, National Association on Mental Health, 1790 Broadway, New York 19, N. Y.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Honorary Secretary.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Stockholm, Sweden, July 16-21. Secretariat: Psychological Institute, Observotoriegatan 8, Stockholm, Sweden.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

INTERNATIONAL HOSPITAL CONGRESS, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

INTERNATIONAL POLIOMYELITIS CONGRESS, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

INTERNATIONAL SOCIETY OF SURGERY, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

PAN AMERICAN CONGRESS ON TUBERCULOSIS, Guayaquil and Quito, Ecuador, S. A., July 14-22. Dr. Marco Martinez M., Casilla de Correos No. 116, Guayaquil, Ecuador, Secretary General.

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

STUDENTS' INTERNATIONAL CLINICAL CONGRESS, Leyden, Utrecht, Groningen and Amsterdam, Holland, July 10-28. N. A. M. Bergstein, Oude Gracht 143 bis, Utrecht, Holland, Secretary General.

WORLD CONFEDERATION FOR PHYSICIAL THERAPY, Copenhagen, Denmark, Sept. 7-8.

WORLD MEDICAL ASSOCIATION, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

DEATHS

Hektoen, Ludvig ✦ internationally known pathologist and 1942 recipient of the Distinguished Service Medal of the American Medical Association, died at Michael Reese Hospital, Chicago, July 5, aged 88, of diabetes. Dr. Hektoen was born in Westby, Wis., July 2, 1863. He studied at Luther College, Decorah, Iowa, and at the University of Wisconsin. His medical career began with a job as druggist in a hospital, which became for him an inspiration to the study of medicine. He graduated in 1887 from the College of Physicians and Surgeons in Chicago, then served as apothecary in the Illinois Eastern Hospital for the Insane and subsequently made first place in the examination for internship at the Cook County Hospital. Here he came under the direct instruction of Christian Fenger. Dr. Hektoen served at Cook County Hospital from 1889 to 1903, as lecturer in pathology at Rush Medical College, 1890-1892, and for a period in the interim as curator of the museum, physician to the coroner's office in Chicago, 1890-1894, and as professor of pathology at the College of Physicians and Surgeons, 1892-1894. Returning to Rush Medical College as professor of morbid anatomy in 1895, he became professor of pathology in 1898, holding this title until 1933, when he became professor emeritus. He was professor and head of the department of pathology at the University of Chicago from 1901 to 1932.

LUDVIG HEKTOEN, M.D.
1863-1951

Throughout his long career Dr. Hektoen was a member of innumerable scientific societies in this country and abroad, having spent several of his early years in postgraduate study in Upsala, Prague, and Berlin. He served as president of the Chicago Medical Society, 1919-1921; the Chicago Pathological Society, 1898-1902; the Association of American Pathologists and Bacteriologists, 1901; Society of American Bacteriologists, 1929, and the Society of Immunologists in 1927. Dr. Hektoen was a founder of the Institute of Medicine of Chicago (1915) and had been from the first active on its board of governors, serving as chairman from 1921 to 1940, when he was chosen honorary chairman. He was president of the institute in 1929. He was vice president of the American Association for the Advancement of Science in 1909 and of the Chicago Academy of Criminology in 1931. He served as chairman of the Division of Medical Sciences of the National Research Council for a year beginning in 1924, again for a year in 1926 and again in 1929. From 1936 to 1938 he was chairman of the National Research Council and from 1934 to 1938 a member of the National Advisory Health Council of the U. S. Public Health Service. At one time he was also a member of the board of trustees of Science Service, representing the National Research Council, and a member of the board of trustees of the American Documentation Institute.

Dr. Hektoen served the American Medical Association as chairman of the Provisional Section on Pathology, 1899-1900, chairman of the Section on Pathology and Bacteriology, 1900-1901, was a member of the House of Delegates in 1918 and 1920, and for many years was chairman of the Committee on Scientific Research, in which position he was instrumental in determining the distribution of grants for research.

Throughout much of his life Dr. Hektoen was engaged in the field of cancer, serving for many years as a member of the board of directors of the American Society for the Control of Cancer and from 1937 to 1944 as executive director of the National Advisory Cancer Council of the U. S. Public Health Service. In 1930 Dr. Hektoen was chosen chairman of the Cancer Research Institute of Chicago, which had been incorporated by the Chicago Woman's Club in 1929, and in 1941 he was named to a similar position for the Chicago Cancer Committee, which was organized as a liaison educational agency. He was one of the founders of the Chicago Tumor Institute and was president of its board of trustees until May, 1951, when he became president emeritus.

His literary contributions have shown an interest in many phases of medical science and his writings have been voluminous. He was editor of *The Journal of Infectious Diseases* from 1904, when it was first established, until 1941. The *Archives of Pathology*, of which he had been editor since its first appearance in 1926, dedicated its July 1938 issue to Dr. Hektoen in commemoration of his 75th birthday. He was at various times editor of the *Proceedings of the Institute of Medicine of Chicago* and of the *Transactions of the Chicago Pathological Society*. His published works include "The Technique of Post-Mortem Examination" and "Introduction to Study of Infectious Diseases." Notable scientific contributions first described by Dr. Hektoen include the term Hektoen's phenomenon: "When antigens are introduced into the animal body in allergic states, there may exist an increased range of new antibody production which may include production of antibodies concerned in previous infections and immunizations."

Dr. Hektoen had given many outstanding lectures, including the Pasteur, the Cutter, and the Fenger lectures. In recognition of his brilliant career as scientist, he was awarded in 1942 the Distinguished Service Medal of the American Medical Association. The previous year he had been accorded the centennial award of the Wisconsin State Medical Society for distinguished service and in 1929 the Order of St. Olaf from the Norwegian government. On July 2, 1943, the John McCormick Institute for Infectious Diseases, of which he had been a founder and director from 1902 to 1940, was rededicated in his honor as the Ludvig Hektoen Institute for Medical Research of Cook County. The occasion marked the 80th birthday of Dr. Hektoen and commemorated his many notable achievements in the fields of pathology, bacteriology, and immunology. Dr. Hektoen's ability as a student and scientist was further recognized in honorary degrees from Rush Medical College, the University of Norway, the University of Michigan, University of Wisconsin, University of Cincinnati, Western Reserve University, and the University of Chicago. In his death, the profession of medicine has lost a truly great physician, and our country, a truly great citizen.

✦ Indicates Fellow of the American Medical Association.

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EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* July 20. Given simultaneously in several cities in the United States. Final date for filing application was Jan. 20. *Oral.* Memphis, Oct. 14-17. *Written.* July 18, 1952. Various locations. Final date for filing applications is Jan. 18, 1952. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various centers, Oct. 15. Final date for filing applications was May 1. *Oral.* The schedule of oral examinations for 1951 has been arranged on a regional basis as follows: New York, date to be announced, covering Maine, Massachusetts, New Hampshire, New York and Vermont. San Francisco, date to be announced, covering Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah and Washington.
Only candidates who have not taken an oral examination can be admitted under the schedule arranged thus far.
Closing dates for the filing of applications for examinations in New York and San Francisco to be announced.
Oral examinations in the subspecialties will be held at the same time and place and on the same distribution.
Exec. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, Oct. 25-26. *Oral* Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan. 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Feb. 1, 1952. Final date for filing applications is Nov. 1. *Oral.* Chicago, June 7-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Paul Titus, 1015 Highland Building, Pittsburgh 6, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Twenty-five centers, Feb. 4-5, 1952. *Oral.* Chicago, October 8-13. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Final date for filing applications for the 1952 Part II examinations is Aug. 15, 1951. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 8-12. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Buffalo, Oct. 26-28. Ex. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Written.* San Francisco, October 28. *Oral.* San Francisco, October 29. Sec., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: Philadelphia, Nov. 17-18. Sec.-Gen., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Washington, D. C., Sept. 17-22. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various centers, Oct. 1951. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

BOARD OF THORACIC SURGERY: *Written.* Various parts of the country. Sept. 14, 1951. Final date for filing applications is July 15. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2, Mich.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-13, 1952. Final date for filing applications is Sept. 1. Sec., Dr. Harry Culver, 314 Corn Exchange Bldg., Minneapolis 15.

MEETINGS

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS, The Homestead, Hot Springs, Va., Sept. 6-8. Dr. William F. Mengert, 2211 Oak Lawn Ave., Dallas, Texas, Secretary.

AMERICAN CONGRESS OF PHYSICAL MEDICINE, Shirley-Savoy Hotel, Denver, Sept. 4-8. Dr. Walter J. Zeiter, 2020 E. 93d St., Cleveland 6, Executive Director.

NATIONAL MEDICAL ASSOCIATION, Philadelphia, Aug. 20-24. Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va., General Secretary.

POST GRADUATE MEDICAL ASSEMBLY OF SOUTH TEXAS, Shamrock Hotel, Houston, Texas, July 23-25. Mrs. W. H. Dahme, 229 Medical Arts Bldg., Houston, Executive Secretary.

RENO SURGICAL SOCIETY CONFERENCE, Riverside Hotel, Reno, Nev., Aug. 23-25. Dr. Olin C. Moulton, 130 N. Virginia St., Reno, Nev., Chairman.

ROCKY MOUNTAIN RADIOLOGICAL SOCIETY, Denver, Aug. 9-11. Dr. Maurice D. Frazer, 1037 Stuart Building, Lincoln, Nebr., Secretary.

WEST VIRGINIA STATE MEDICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, July 19-21. Mr. Charles Lively, 1031 Quarrier St., Charleston 24, Executive Secretary.

INTERNATIONAL

ASSOCIATION INTERNATIONALE DE PSYCHOTECHNIQUE, Gothenburg, Sweden, July 24-28. Dr. Franziska Baumgarten-Tramer, Thunstrasse 35, Berne, Switzerland.

EUROPEAN CONGRESS ON RHEUMATISM, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edström, Sweden, Secretary.

GENERAL PRACTITIONERS STUDY CLUB INTERNATIONAL, Rome, Italy, Sept. 12-15. Dr. John O'Connell, 10300 Lackland Road, St. Louis 14, Mo., U. S. A., President.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

INTERNATIONAL ASSOCIATION OF ALLERGISTS, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

INTERNATIONAL CONGRESS OF ANESTHESIOLOGY, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept 20-22. 12 rue de Seine, Paris 6e, France, Secretariat.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

INTERNATIONAL CONGRESS ON INDUSTRIAL MEDICINE, Instituto Superior Técnico, Lisbon, Portugal, Sept. 9-15. Dr. Luis Guerreiro, Instituto Nacional do Trabalho e Previdência, Praça do Comercio, Lisbon, Secretary General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19. Mrs. Grace E. O'Neill, Division of World Affairs, National Association on Mental Health, 1790 Broadway, New York 19, N. Y.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Honorary Secretary.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Stockholm, Sweden, July 16-21. Secretariat: Psychological Institute, Observotoriegatan 8, Stockholm, Sweden.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

INTERNATIONAL HOSPITAL CONGRESS, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

INTERNATIONAL POLIOMYELITIS CONGRESS, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

INTERNATIONAL SOCIETY OF SURGERY, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

PAN AMERICAN CONGRESS ON TUBERCULOSIS, Guayaquil and Quito, Ecuador, S. A., July 14-22. Dr. Marco Martinez M., Casilla de Correos No. 116, Guayaquil, Ecuador, Secretary General.

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS, Honolulu, Hawaii, Nov. 7-19. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

STUDENTS' INTERNATIONAL CLINICAL CONGRESS, Leyden, Utrecht, Groningen and Amsterdam, Holland, July 10-28. N. A. M. Bergstein, Oude Gracht 143 bis, Utrecht, Holland, Secretary General.

WORLD CONFEDERATION FOR PHYSICIAL THERAPY, Copenhagen, Denmark, Sept. 7-8.

WORLD MEDICAL ASSOCIATION, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

DEATHS

Hektoen, Ludvig ✠ internationally known pathologist and 1942 recipient of the Distinguished Service Medal of the American Medical Association, died at Michael Reese Hospital, Chicago, July 5, aged 88, of diabetes. Dr. Hektoen was born in Westby, Wis., July 2, 1863. He studied at Luther College, Decorah, Iowa, and at the University of Wisconsin. His medical career began with a job as druggist in a hospital, which became for him an inspiration to the study of medicine. He graduated in 1887 from the College of Physicians and Surgeons in Chicago, then served as apothecary in the Illinois Eastern Hospital for the Insane and subsequently made first place in the examination for internship at the Cook County Hospital. Here he came under the direct instruction of Christian Fenger. Dr. Hektoen served at Cook County Hospital from 1889 to 1903, as lecturer in pathology at Rush Medical College, 1890-1892, and for a period in the interim as curator of the museum, physician to the coroner's office in Chicago, 1890-1894, and as professor of pathology at the College of Physicians and Surgeons, 1892-1894. Returning to Rush Medical College as professor of morbid anatomy in 1895, he became professor of pathology in 1898, holding this title until 1933, when he became professor emeritus. He was professor and head of the department of pathology at the University of Chicago from 1901 to 1932.

LUDVIG HEKTOEN, M.D.
1863-1951

Throughout his long career Dr. Hektoen was a member of innumerable scientific societies in this country and abroad, having spent several of his early years in postgraduate study in Upsala, Prague, and Berlin. He served as president of the Chicago Medical Society, 1919-1921; the Chicago Pathological Society, 1898-1902; the Association of American Pathologists and Bacteriologists, 1901; Society of American Bacteriologists, 1929, and the Society of Immunologists in 1927. Dr. Hektoen was a founder of the Institute of Medicine of Chicago (1915) and had been from the first active on its board of governors, serving as chairman from 1921 to 1940, when he was chosen honorary chairman. He was president of the institute in 1929. He was vice president of the American Association for the Advancement of Science in 1909 and of the Chicago Academy of Criminology in 1931. He served as chairman of the Division of Medical Sciences of the National Research Council for a year beginning in 1924, again for a year in 1926 and again in 1929. From 1936 to 1938 he was chairman of the National Research Council and from 1934 to 1938 a member of the National Advisory Health Council of the U. S. Public Health Service. At one time he was also a member of the board of trustees of Science Service, representing the National Research Council, and a member of the board of trustees of the American Documentation Institute.

Dr. Hektoen served the American Medical Association as chairman of the Provisional Section on Pathology, 1899-1900, chairman of the Section on Pathology and Bacteriology, 1900-1901, was a member of the House of Delegates in 1918 and 1920, and for many years was chairman of the Committee on Scientific Research, in which position he was instrumental in determining the distribution of grants for research.

Throughout much of his life Dr. Hektoen was engaged in the field of cancer, serving for many years as a member of the board of directors of the American Society for the Control of Cancer and from 1937 to 1944 as executive director of the National Advisory Cancer Council of the U. S. Public Health Service. In 1930 Dr. Hektoen was chosen chairman of the Cancer Research Institute of Chicago, which had been incorporated by the Chicago Woman's Club in 1929, and in 1941 he was named to a similar position for the Chicago Cancer Committee, which was organized as a liaison educational agency. He was one of the founders of the Chicago Tumor Institute and was president of its board of trustees until May, 1951, when he became president emeritus.

His literary contributions have shown an interest in many phases of medical science and his writings have been voluminous. He was editor of *The Journal of Infectious Diseases* from 1904, when it was first established, until 1941. The *Archives of Pathology*, of which he had been editor since its first appearance in 1926, dedicated its July 1938 issue to Dr. Hektoen in commemoration of his 75th birthday. He was at various times editor of the *Proceedings of the Institute of Medicine of Chicago* and of the *Transactions of the Chicago Pathological Society*. His published works include "The Technique of Post-Mortem Examination" and "Introduction to Study of Infectious Diseases." Notable scientific contributions first described by Dr. Hektoen include the term Hektoen's phenomenon: "When antigens are introduced into the animal body in allergic states, there may exist an increased range of new antibody production which may include production of antibodies concerned in previous infections and immunizations."

Dr. Hektoen had given many outstanding lectures, including the Pasteur, the Cutter, and the Fenger lectures. In recognition of his brilliant career as scientist, he was awarded in 1942 the Distinguished Service Medal of the American Medical Association. The previous year he had been accorded the centennial award of the Wisconsin State Medical Society for distinguished service and in 1929 the Order of St. Olaf from the Norwegian government. On July 2, 1943, the John McCormick Institute for Infectious Diseases, of which he had been a founder and director from 1902 to 1940, was rededicated in his honor as the Ludvig Hektoen Institute for Medical Research of Cook County. The occasion marked the 80th birthday of Dr. Hektoen and commemorated his many notable achievements in the fields of pathology, bacteriology, and immunology. Dr. Hektoen's ability as a student and scientist was further recognized in honorary degrees from Rush Medical College, the University of Norway, the University of Michigan, University of Wisconsin, University of Cincinnati, Western Reserve University, and the University of Chicago. In his death, the profession of medicine has lost a truly great physician, and our country, a truly great citizen.

✠ Indicates Fellow of the American Medical Association.

Titus, Paul ✦ for many years secretary-treasurer and director of the American Board of Obstetrics and Gynecology, died suddenly at his home in Pittsburgh June 28, aged 66, of coronary thrombosis. Dr. Titus was born in Batavia, N. Y., May 6, 1885. Following graduation from Yale University School of Medicine in New Haven, Conn., in 1908, he went to Heidelberg, Germany, where he became an assistant at the Universitäts Frauenklink, serving until 1910. Returning to this country, he served as an assistant in obstetrics at Johns Hopkins Hospital in Baltimore from 1910 to 1911, then became a resident obstetrician and gynecologist at the Elizabeth Steel Magee Hospital. He was affiliated at various times with the St. Margaret Memorial Hospital, Pittsburgh Hospital, Western Pennsylvania Hospital, and Shadyside Hospital in Pittsburgh and the Homestead Hospital in Homestead, Pa. He was secretary-treasurer of the Advisory Board for Medical Specialists from its inception in 1933 until 1941, vice president from 1943 to 1945, and president from 1945 to 1947. In 1933-1934 Dr. Titus served as vice chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association. Through his activities on the Post Graduate Survey Committee of the American Board of Obstetrics and Gynecology, he worked with the Council on Medical Education and Hospitals of the American Medical Association on approval of residency programs. He was president of the Association of Yale Alumni in Medicine in 1942-1943, and of the Pittsburgh Academy of Medicine in 1929-1930. Long active in the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Dr. Titus had been a member of its executive council from 1929 to 1935 and from 1939 to 1945, and served as president in 1937-1938. He was a member of the American Gynecological Society, serving as vice president in 1948-1949, and the Society Royale, Belge de Gynecologie et d'Obstétrique, and a fellow of the American College of Surgeons. In 1937 he was decorated by the Hungarian government with the Commander Cross of the Hungarian Order of Merit in recognition of his work in obstetrics. From 1915 to 1919 he was a civilian aide to the Military Special Agent for Naval Intelligence and in 1943-1944 was a consultant to the surgeon general of the United States Army. He entered the service July 22, 1944 as a lieutenant commander and later was promoted to Captain in the Naval Reserve and assigned to the Professional Division of the Bureau of Medicine and Surgery in Washington, D. C., until 1946. He was awarded the Navy Commendation Ribbon in 1945 and commended by Secretary of the Navy James Forrestal "for distinctive service in establishing a professional standard for intern and residency training in naval hospitals," and "for his cooperative efforts toward the establishment and professional classification of reserve medical officers and the procurement of important data." Since 1946 he had been a reserve consultant to the advisory board of the Bureau of Medicine of the Navy Department, and since 1948 a member of the Armed Forces Medical Advisory Committee. Dr. Titus was directing editor of the "Directory of Medical Specialists" from 1937 to 1947, and at the time of his death he was a member of the advisory editorial board of the *American Journal of Obstetrics and Gynecology*. He was the author of "Management of Obstetric Difficulties," 1937, second edition in 1940, third edition in 1945; "Diseases of Women for the General Practitioner," 1937, and "Atlas of Obstetric Technic," 1943, second edition in 1949.

Price, George Elmer ✦ Seattle; born in Bridgeport, Pa., Feb. 10, 1874; University of Pennsylvania Department of Medicine, Philadelphia, 1898; specialist certified by the American Board of Psychiatry and Neurology; member of the American Medical Association, American Neurological Association, and the North Pacific Society of Internal Medicine; at one time practiced in Philadelphia, where he had been on the faculty of Jefferson Medical College and affiliated with Philadelphia General and Jefferson Medical College hospitals; consultant in neuropsychiatry at the U. S. Marine Hospital; served during World War I; died in Seattle General Hospital April 24, aged 77, of bronchopneumonia and carcinoma of the stomach.

Miller, Raymond Eugene, Clarkston, Mich.; Detroit Homeopathic College, 1904; died Feb. 1, aged 71, of coronary thrombosis and chronic nephritis.

Nelken, Bernard Earl ✦ Baton Rouge, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1924; specialist certified by the American Board of Internal Medicine; served during World War II; secretary of the East Baton Rouge Parish Medical Society; affiliated with Baton Rouge General Hospital and Our Lady of the Lake Sanitarium; died Feb. 9, aged 53, of coronary thrombosis.

Riley, Josephine, Chillicothe, Ohio; National University Medical Department, Washington, D. C., 1901; died in Chillicothe Hospital April 11, aged 88, of fracture of the left hip and arteriosclerosis.

Roberson, Arthur William, Chicago; Meharry Medical College, Nashville, Tenn., 1919; died April 25, aged 56, of concussion of the brain resulting from a fall.

Robinson, William Arthur, Ocean Grove, N. J.; Jefferson Medical College of Philadelphia, 1905; member of the American Medical Association; on the staff of the Monmouth Memorial Hospital in Long Branch and Fitkin Memorial Hospital in Neptune, where he died April 26, aged 69, of carcinoma of the pancreas.

Ryley, Harold William, East Rutherford, N. J.; Harvard Medical School, Boston, 1922; school physician; member of the American Medical Association; on the staff of the Hackensack (N. J.) Hospital, where he died April 19, aged 57.

Sanger, Fenton Mercer ✦ Oklahoma City, Okla.; Epworth College of Medicine, Oklahoma City, 1907; member of the American Medical Association; served during World War I; died in April, aged 83, of coronary occlusion and arteriosclerosis.

Schnitter, Charles Henry, Grand Island, N. Y.; University of Buffalo School of Medicine, 1934; member of the American Medical Association; school physician; served on the staff of the Millard Fillmore Hospital in Buffalo; died April 25, aged 42, of congestive heart failure.

Seaman, James Alpheus ✦ Springfield, Mass.; Columbia University College of Physicians and Surgeons, New York, 1919; specialist certified by the American Board of Urology; member of the American Urological Association; fellow of the American College of Surgeons; for many years secretary of the Springfield Academy of Medicine; on the staff of the Westfield (Mass.) State Sanatorium, Springfield Hospital, Holyoke (Mass.) Hospital, and Shriners Hospital for Crippled Children; died in Springfield Hospital April 21, aged 61, of cerebral hemorrhage.

Thompson, William C. ✦ Westerly, R. I.; New York Homeopathic Medical College and Hospital, New York, 1903; member of the staff of Westerly Hospital; consultant on the staff of South County Hospital in Wakefield; died March 18, aged 74, of aortic stenosis and pulmonary infarct.

Thomson, Alexander ✦ Detroit; Detroit College of Medicine, 1894; died April 2, aged 82, of acute coronary thrombosis.

Utter, John Charles, Mount Carmel, Ill.; Miami Medical College, Cincinnati, 1880; died April 15, aged 91, of injuries received in a fall.

Van Doren, William ✦ Mechanicville, N. Y.; Albany (N. Y.) Medical College, 1889; an Associate Fellow of the American Medical Association; past president of the school board; died April 21, aged 85.

Van Vranken, Albert Bensen ✦ Skaneateles, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1900; formerly practiced in Schenectady, where he was on the staff of Ellis Hospital; died April 29, aged 77, of carcinoma.

Wallace, Harry Clay, Mount Healthy, Ohio; Medical College of Ohio, Cincinnati, 1900; died in Cincinnati April 17, aged 81, of cardiorenal disease.

Wilkin, W. Ernest ✦ South Whitley, Ind.; Barnes Medical College, St. Louis, 1904; served on the staff of Lutheran Hospital in Fort Wayne; died April 16, aged 70, of cerebral hemorrhage.

Williams, Rodney Ralph ✦ Dobbs Ferry, N. Y.; Cornell University Medical College, New York, 1908; member of the American Psychiatric Association; affiliated with the Children's Village; at one time on the staffs of the Binghamton (N. Y.) State Hospital and the Hudson River State Hospital in Poughkeepsie; served as consulting psychiatrist to the Westchester County Children's Court; died April 14, aged 68, of heart disease.

GOVERNMENT SERVICES

ARMY

Civilian Medical Care for Army Personnel.—The following statement, slightly abbreviated here, was submitted by the Surgeon General's office:

Adequate and timely medical care and treatment, including hospitalization, is provided for Army personnel in the United States generally by dispensaries, infirmaries, and hospitals located at the many Army installations throughout the country. However, there are many locations where Army or other United States federal medical treatment facilities are not available when medical service is required by Army personnel. In cases of this nature the services of civilian physicians, clinics, and hospitals are necessary. Certain criteria, in accord with current laws and regulations, define the conditions under which individuals of the Army may be authorized civilian medical care (other than elective) at the expense of the Army. Such care is authorized for commissioned officers, contract surgeons when employed by the Army on a full-time basis, warrant officers, enlisted personnel, cadets of the United States Military Academy, general prisoners, and prisoners of war, when these personnel are on a duty status or when they are absent from their place of duty, on leave or informal leave (pass) status. Applicants for enlistment in the Army and selectees also are authorized necessary civilian medical care at the expense of Army funds while they are being processed for enlistment or induction into the Army. Payment for civilian medical expenses incurred by Army personnel who are absent without leave is not authorized. Any obligations resulting from civilian medical care to Army personnel who are absent without leave are the responsibility of the Army individual concerned.

Normally, civilian medical care for Army personnel is authorized only when there are no other federal medical treatment facilities available. First aid or emergency treatment is authorized at any time, notwithstanding the proximity of Army or other federal medical treatment facilities. Emergency medical care may be defined as that required to save life, limb, or prevent great suffering. Surgical operations should not be performed without prior approval of military authorities, unless indicated as an emergency procedure. Elective medical treatment in civilian medical treatment facilities or by civilian physicians will not be authorized, as Army funds cannot be used for payment of these services.

Due to limitation of funds available, medical care of dependents of military personnel from civilian sources, at Army expense, is not authorized. Dependents of military personnel may obtain available medical care at Department of Defense medical facilities only. Any obligations resulting from civilian medical care to dependents of military personnel are the responsibility of the dependents concerned or their sponsors.

As a general rule, the local military commander will furnish the civilian medical agency with prior written authority for ordinary medical care to Army personnel under his jurisdiction. In such cases prior arrangements with the civilian medical agency will be made by the individual or by a proper military authority. For emergency patients treated without prior written authorization the surgeon of the nearest military command should immediately be notified by the civilian medical agency, giving the individual's name, organization, nature of illness or injury, and statement of the practicability of transfer of the patient to an Army or other governmental hospital. The civilian agency or physician then will be advised without delay by the appropriate military authorities as to procedures to be followed.

Bills for authorized medical care and treatment of Army personnel should be submitted to the commanding officer of the organization to which the patient belongs, or to the military authority who provided the authorization for the medical service. If the location of these individuals is not readily known or if such military commanders authorizing treatment have moved to another station, bills for medical services rendered should be submitted to the military authorities listed below according to states.

For Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont submit bills to the Surgeon, First Army, Governors Island, New York.

For Delaware, Kentucky, Maryland, Ohio, Pennsylvania, Virgina, and West Virginia submit bills to the Surgeon, Second Army, Fort George G. Meade, Md.

For Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee submit bills to the Surgeon, Third Army, Fort McPherson, Ga.

For Arkansas, Louisiana, New Mexico, Oklahoma, and Texas submit bills to the Surgeon, Fourth Army, Fort Sam Houston, Texas.

For Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin, and Wyoming submit bills to the Surgeon, Fifth Army, 1660 E. Hyde Park Blvd., Chicago 15, Ill.

For Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, and Washington submit bills to the Surgeon, Sixth Army, Presidio of San Francisco, Calif.

For Washington, D. C., submit bills to the Surgeon, Military District of Washington, Washington 25, D. C.

The bill should show the full name, rank, and service number of the patient, place, and inclusive dates of treatment, diagnosis, and charges, all itemized separately. The duty status of the patient at the time of illness or injury also should be shown, such as duty, leave, or pass. Payment will be expedited if the following certificate is typed on the bill and signed:

"I certify that the above charges are correct and just; that payment therefor has not been received; that the services were necessary in the care and treatment of the person named above; that the services were rendered as stated; and that the charges do not exceed those customarily charged in this vicinity."

(Signature of Payee) (Title or Capacity)

Further information concerning this matter may be requested of the military surgeons at the above addresses or from the Surgeon General, Department of the Army, Washington 25, D. C. Any difficulties experienced should be called to the attention of these Army authorities in order that this program may render the American soldier the prompt and adequate care and treatment to which he is entitled.

DEPARTMENT OF DEFENSE

Dr. Lovelace to Head Medical Policy Council.—Appointment of Dr. W. Randolph Lovelace II as chairman of the Armed Forces Medical Policy Council, effective July 1, was announced May 8 by George C. Marshall, secretary of defense. Dr. Lovelace succeeds Dr. Richard L. Meiling, whose resignation becomes effective June 30. Dr. Lovelace resides in Albuquerque, N. M., where he is head of the section on surgery and a member of the board of governors of Lovelace Clinic. During World War II he served with the Army Air Force, advancing from the rank of major to that of colonel. He was awarded the Distinguished Flying Cross, the Air Medal and three combat stars, the Legion of Merit, and the Army Commendation Ribbon. In 1945 he was presented the Royal Order of the Sword by the king of Sweden.

He has served as surgical consultant for a number of hospitals and two commercial airlines and was appointed a member of the Armed Forces Medical Policy Council when it was established on January 2, 1951. He received an A.B. degree from Washington University, St. Louis, in 1930; an M.D. at Harvard University in 1934; an M.S. in surgery at the University of Minnesota in 1939, and later was graduated from the School of Aviation Medicine, Randolph Field, Tex.

Dr. Lovelace is a diplomate of the American Board of Surgery, a fellow of the American Medical Association, the Institute of Aeronautical Sciences, and the Aero Medical Association, is affiliated with the University of Colorado Medical School as a lecturer in physiology, has contributed numerous papers to medical journals, and was co-winner of the Collier Trophy Award in 1940.

FOREIGN LETTERS

BELGIUM

International Congress on Hospitals.—The Seventh International Congress on Hospitals will be held in Brussels July 15-21, 1951, under the chairmanship of René-Sand. The Congress on Hospitals, the last of which was held in Groningen in 1949, is usually attended by hundreds of directors of public services, men and women active in charities, directors of hospitals, physicians, nurses, social workers, architects, engineers, and technicians. The congress will be devoted especially to hospital problems concerning chronically ill patients and old people. The congress will state its principles and define the outlines of its work. A joint report will be presented at the opening session by Dr. E. M. Bluestone, former director of the Montefiore Hospital in New York, and by Dr. Pierre Delore, professor, Faculty of Médicine, Lyon. The four study sessions will be held simultaneously; problems concerning chronic disease will be discussed.

Infant Mortality in Belgium.—Professor Garot of the University of Liège published in *Bruxelles-Médical* an article on work done to decrease the infant death rate. Infant mortality has greatly decreased in Belgium. From 1935 to 1939, the recorded death rate was between 7.85 and 7.25%; the rate decreased to 5.03% in 1948 and to 4.77% in 1949. This reduction reclassifies Belgium as a country with a low infant death rate. However, the leading countries are still far in advance of Belgium; the rate in Holland in 1948, for example, was only 2.8%. Of a total infant death rate of 6.67%, calculated in relation to the living newborn infants, the death rate was 2.64% the first month and 4.03% during the following 11 months. Consequently, neonatal mortality represents 39.6% of the total infant mortality. Deaths occurring between 1 and 6 months of age represent 45.6% of the mortality for the first year, while mortality between 6 and 12 months is only 14.8% of the total.

In order of importance, the causes of death are listed as follows: (1) premature birth and congenital debility (35.14%), (2) diseases of the respiratory apparatus (17.20%), (3) specific acute and chronic infections (13.08%), (4) diseases of the digestive tract (10.60%), and (5) miscellaneous causes (23.59%). Most unavoidable deaths occur in the first days or weeks of life and are mainly due to trauma and malformation. There is a high incidence of death due to premature birth or congenital debility during the first month. Death from respiratory disease reaches a clearly defined peak between 3 and 9 months of age, in which period one-third of the total deaths occur. Death by specific infection follows an increasing curve with age, but there is an increased incidence after the age of 7 months.

The influence of seasons is definite. Between 1 and 12 months of age, infant mortality reaches a maximum during the first three months of the year and drops to a minimum during the third quarter of the year. The highest incidence of respiratory diseases occurs in the first quarter and the lowest incidence in the third quarter of the year. The peak of specific infections is reached during the first quarter of the year. The lowest incidence of digestive diseases is recorded during the first quarter and the highest during the third quarter of the year.

Fetal anoxia is an important cause of neonatal mortality. Experience has proved, in fact, that it is the diminished oxygen supply to the fetus that most frequently causes accidents leading to stillbirth and to neonatal mortality. Anoxia is a main factor or an aggravating factor in about 50% of the cases of early death. The author concludes that, under the present circumstances, it is not possible to hope to reduce in the coming years to less than 1.5% the mortality of infants between the ages of 1 and 12 months.

Medical Examination of Students.—The free University of Brussels has created a service of preventive medicine, and *Bruxelles-Médical* has just published the first results of their activities during 1949-1950. During the year, 3,821 young persons have been screened by roentgenography, among whom 63 (1.3%) underwent a more thorough examination. Forty-three of the latter group (1.1%) were re-examined, and 5 (0.3%) were found to have an active tuberculous process. This proportion agrees with those reported by other universities. The results of these examinations stress the significance of preventive medical examination. In general it calls the students' attention to weak points in their health. In some particular cases, which were fortunately limited, it has permitted the early recognition and prompt treatment of students with tuberculous lesions.

Cancer of the Heart.—A report of a rare condition was presented at the Belgian Society of Cardiology by Courtoy and Potvliege. An elderly woman showed cardiac decompensation (of right ventricular type). Necropsy disclosed a large heart (825 gm.) a blood-stained pericardiac effusion, and a tumor almost completely destroying the right ventricle. Microscopic examination revealed the reticulosarcomatous nature of the tumor. There was no bundle branch block demonstrated by the electrocardiogram, despite tumor involvement of the terminal portion of the right division of the bundle of His.

Campaign Against Sleeping Sickness in the Belgian Congo.—An important contribution to the fight against sleeping sickness is presented in the recent report of the Central Committee for Medical Services of the Colony. Excellent results were obtained during the last year through the institution of prophylactic treatment with pentamidine® (4,4-[pentamethylenedioxy] dibenzamidine). In 1950, new cases of trypanosomiasis registered totaled 7,609, compared with 9,873 in 1949 and 11,080 at the end of World War II.

ITALY

Chronic Laryngitis.—Prof. Ernesto Pallestrini, recently appointed director of the otorhinolaryngological clinic of the University of Genoa, lectured on chronic laryngitis. Functional laryngeal changes occur during treatment with estrogenic substances. Allergic manifestations, such as the edema of the laryngeal tissues and of the glottis with dysphonia and dyspnea, are now better recognized. Some pathological conditions of the laryngeal mucosa attributed in the past to neuroarthritism and to hormone dysfunction are now known to be due to vitamin deficiencies. Endocrinology has contributed important information on, for example, the interrelation of the larynx and the adrenals and of the sex hormone dysfunctions that cause laryngeal dysfunctions.

According to the speaker constitutional conditions are of fundamental importance in maintaining or aggravating, but never determining, laryngitis. In catarrhal laryngitis, clinical observation aids in establishing the presence and the prevalence of epithelial injuries, injuries of the connective tissue, muscular lesions, and nervous lesions. The predominance of one of these over the others determines the particular clinical form. Among all these, the best known are the epithelial lesions, because they do not present difficulty in visualization; however, on microscopic examination, one becomes convinced that there are also important alterations of the underlying connective tissue. With respect to laryngeal cancer, Professor Pallestrini believes that inflammation of the laryngeal mesenchymatous tissue can constitute a precancerous condition.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Electrochemography of the Heart.—At a meeting of the medical academy Filippo Pacini in Pistoia, Professor Pozzi discussed electrochemocardiographic equipment, consisting of the roentgenologic apparatus, the photoelectric cell with electronic multiplication, the fluorograph, and the electrocardiograph. The speaker supported Professor Luisada's concept that a phonocardiograph, instead of the carotid or the jugular pulse, may be used for timing. He explained the fundamental principle on which electrochemography is based, the different physiological phases that occur, the significance of the tracings, and the principles to be followed in reading them.

An experimental session followed in the roentgenologic laboratory, and the speaker, in cooperation with Professor Romagnoli, demonstrated the procedure of mounting the photocell. Comparing a series of tracings obtained according to the methods of Lianminot and Luisada with the tracings obtained with the most modern electrochemograph, Professor Pozzi showed how the three types of tracings (venoatrial, ventricular, and arterial), although identical in fundamental characteristics, have been enriched in details.

International Radiomedical Center.—Prof. Guido Guida, President of the International Radiomedical Center, discussed the aid given by the center during the year 1950 to seamen aboard Italian and foreign ships in the Mediterranean Sea. The center has established a short-wave radio, which operates 24 hours a day, with broadcasts at fixed hours. It has also organized a course of elementary radio medicine for captains of ships. The center broadcasts a medical program dealing with subjects of interest to the seamen, especially with the problem of nutrition and of human pathology in the tropics. At present it is studying the possibility of extending the radio medical assistance to passengers of long-distance air lines. Sixteen surgical and 198 medical patients were treated during the year 1950.

BRAZIL

Acute Appendicitis in Children.—Dr. Primo Curti, of Hospital das Clinicas, São Paulo, reported the analysis of 91 cases of acute appendicitis in children under 12 years. The diagnosis was confirmed in all cases by examination of the appendix and the peritoneum. The author's cases were compared with the well-known cases of Hudson and Chamberlain, Scott and Ware, Stone, and Boyce, in the American medical literature. The 91 cases were divided as follows: catarrhal 26 (28.6%), fibrinous 9 (9.9%), gangrenous 10 (11.0%), hyperplastic 7 (7.6%), suppurated 13 (14.3%), and perforated 26 (28.6%). The last two types, which comprise the severer forms, represent 42.9% of the total, which does not differ significantly from the figures for the American authors (Hudson and Chamberlain, 44%; Scott and Ware, 44.4%; Stone, 44.9%, and Boyce 37.2%). The same may be said about the sex distribution, as the percentage of male patients is practically the same for all the series of patients (Curti, 54%; Scott and Ware, 59%; Stone, 55%, and Hudson and Chamberlain, 34%). The duration of hospitalization averaged 5.3 days in the simple, catarrhal cases, as against an average of 11.7 days for the remaining cases.

Pulmonary Lesions in South American Blastomycosis.—Pulmonary lesions are now known to be relatively frequent in South American blastomycosis, contrary to reports of earlier authors who studied the disease without the help of routine x-ray examinations and autopsy of the lungs. A. Fialho, in his pathological study of the pulmonary involvement of the disease, published in 1946, stressed the paucity of symptoms and the absence of pain, dyspnea, hemoptysis and high fever, pointing out that a slight cough and low fever are in general the only clinical symptoms of such localization. In a recent study of South American blastomycosis, Carlos S. Lacaz, of the department of microbiology and immunology of São Paulo University, reports the result of x-ray and sputum examinations in 35 cases with the discovery of pulmonary involvement in 20 (57.1%). An important point was particularly studied by Lacaz: Does spontaneous regression of a blastomycotic pulmonary focus occur? In 1946, A. Fialho presented pathological proof of spontaneous remission, such as that which occurs in other pulmonary mycoses, particularly coccidioidal granulomatosis. It is known that in some fungous infections endemic in some sections of the United States, most humans can spontaneously overcome the infection. In such instances, the patients are sensitive for a long period to products of fungi known as coccidioidin and histoplasmin and respond positively to cutaneous tests with these substances. With respect to South American blastomycosis, it has never been proved that a subject with a positive reaction to paracoccidioidin has had a "slight pulmonary infection" without having the "disease." The slight pulmonary lesions—a kind of primary blastomycotic complex—might be calcified, regress, or become generalized. Lacaz, in a preliminary survey of 330 patients, gave intradermal injections of paracoccidioidin in a Smith medium and obtained 26 positive results (7.8%). Results of radiologic examination of the lungs of these patients were normal, and Paracoccidioides brasiliensis was not found. A new series of tests is being performed with diluted paracoccidiodin, in order to eliminate false positive reactions and cross reactions with another mycosis.

Death of Dr. G. Paula Souza.—Dr. Geraldo Paula Souza, dean of the school of hygiene and public health, São Paulo University, and permanent delegate of Brazil to the World Health Organization, died recently, at the age of 62. He studied medicine in Switzerland and Germany and public health at Johns Hopkins University, and commenced his teaching career as assistant to Dr. Darling, who was, from 1918 to 1922, professor of hygiene at São Paulo University. From 1922 to 1927, Dr. Paula Souza was director of the São Paulo state department of health, where he introduced modern methods of public health administration. He was the founder of the São Paulo Institute of Hygiene, which a few years ago was transformed in a School of Hygiene and Public Health with the cooperation of the Rockefeller Foundation. In 1945, Dr. Paula Souza, one of the members of the Brazilian delegation to the San Francisco conference, was the most ardent advocate of the creation of the World Health Organization, and was the author of the proposal to include the "right to health" in the United Nations charter. His death is a loss particularly to the public health field in Brazil.

ECUADOR

Yellow Fever.—Yellow fever disappeared from Ecuador for many years after the campaign against the disease, which was carried on under the direction of Dr. Noguchi, several years ago. Recently the disease reappeared in a municipality 100 km. from Esmeraldas City, in the mountains in the northeast part of the country. About 50 cases of the disease, identified as the jungle form of yellow fever, occurred. A campaign of vaccination against yellow fever was successfully completed. The authorities state the danger is now over.

Maternity Hospital in Quito.—The Isidro Ayora maternity hospital was opened on May 26. It is named for the greatest obstetrician of Ecuador. The hospital, the construction and equipment of which are very much up-to-date, occupies a total area of 7,344 square meters, with a capacity of 210 beds and a space of 40 square meters per bed. It was equipped by donations from the United States of America and the United Nations. The new maternity will function the first year on a budget of 1,906,000 sucres under the direction of an administrative council made up of representatives of the Ministry of Public Aid and Social Assistance and of the Cooperative Service of North America. Dr. César Jácome, head of the old maternity hospital and director of the school of obstetrics of Central University, was appointed director. The president of the republic, the authorities of the state, and the members of the Cooperative Service of North America were present at the opening ceremonies held in May, during which Dr. Maurice Pate, executive director of the UNICEF, received a medal for services given to Ecuador.

CORRESPONDENCE

THE GENERAL PRACTITIONER

To the Editor:—I agree with the statement by Dr. Edward P. Lehman in the May 19 issue of THE JOURNAL that the closed staff of the hospital definitely resulted in an improved quality of surgical performance and there is no reason why those procedures requiring a definite and acquired amount of skill should be open to an ill-trained man. Unfortunately, this closing of hospitals did not stop at surgery. It has gradually increased to such an extent that only board men in some larger cities have access to the staff of hospitals, and in many hospitals, if an individual has maternity privileges, he is not permitted to bring his medical cases in. If he has pediatric privileges, he may not bring his gynecological patients in. So, far from being the ideal set-up, it has gradually served to eliminate the hospital practice of an all-round family doctor and concentrated it in the hands of those who profess a specialty. The reaction of the public has been, "If my doctor cannot take care of my child as well as me, what kind of a doctor is he?" And while it may be unwise to believe that the closing of hospital staffs throughout the country was motivated by selfishness alone, it is not unusual to find a newcomer in a community with restricted privileges, while those men who have resided in the community over a long period of years have unlimited privileges despite inadequate training. It is well known that in many areas cliques of doctors do restrict the privileges to their select few.

I greatly fear that many of the surgical procedures which are looked on by the surgeon as requiring a great deal of technique in reality do not. Many general practitioners are forced to do hemorrhoidectomies in the office because the surgical staff will not give him these privileges. Yet these same hospitals may permit him to deliver a baby, though the mortality and morbidity to both mother and infant are infinitely higher than may be expected from hemorrhoidectomy. Many a general practitioner is forced to do a diagnostic dilation and curettage in his office because the privilege of doing them in the hospital is restricted to the surgeon.

I have an x-ray in my office as a matter of service and convenience, and my good friend the radiologist aids me and has never accused me of trying to usurp his specialty. I have an electrocardiogram for the same reason and my friend the internist aids me without accusing me. Yet, I have no desire to be either a radiologist or a cardiologist. Why shouldn't the surgeon offer me the same courtesy and assistance? Many of us have no surgical aspirations whatsoever, but we do feel that certain surgical procedures can and should be done by the family doctor. As general practitioners who are endeavoring to keep abreast of the practice of medicine, the majority of us feel that we know our limitations, that we have no desire to encroach upon someone else's territory, that we place the welfare of the patient above all else, that we have an unlimited belief in the future of general practice, or we would not be doing it.

If the system of closed staffs and hospitals were fair and just, then the plan of the American Academy of General Practice for General Practice Staffs would not be necessary, but the plan is approved by the American Medical Association, the American College of Surgeons, and the American Hospital Association. The inference, then, is that somewhere between the hogwash of the ivory-towered altruist and the grasping of the unscrupulous worker (either general practitioner or specialist) lies the fundamental truth: that both specialist and general practitioner need a place in the medical sun and someday the pendulum may come to rest.

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SCHEDULES OF ANTIBIOTIC ADMINISTRATION

To the Editor:—Your editorial on "Schedules of Antibiotic Administration" in the April 21 number of THE JOURNAL appears to me to be confusing and to neglect consideration of most important evidence available on the subject. I cannot agree that any uncertainty as to the most effective dosage schedule of antibiotics will be resolved by conclusive information "as to whether the mechanism of their action in vivo is the same as that in vitro or whether host factors may supervene to augment and to supplement their direct bactericidal effect." Neither do I follow the reasoning that leads to the conclusion that "the concentration of penicillin at the focus of infection should *probably* be maintained at the maximally effective level" (italics mine). Instead of attempting to solve the problem of the most effective dosage schedule of penicillin by speculation and reasoning from extraneous data as to its action in vitro, would it not be better to heed old John Hunter's advice to Jenner, ". . . but why think? Why not try the experiment?" In fact, in the third paragraph of your editorial, which completely contradicts the "probable" conclusion arrived at in the second paragraph, it is admitted that Hunter's advice has been taken by some bold souls: ". . . clinical experience has shown that many infections can be adequately controlled by intermittent treatment, with long penicillin-free intervals."

Although these findings refute the belief that a constantly maintained critical concentration of penicillin is essential for satisfactory therapeutic response, they do not permit decision as to the relative effectiveness of frequent or widely spaced administrations of the drug. This decision will be made neither by consideration of speculations on in vitro data nor by studies in severely ill patients. We can, however, set up rigidly controlled experiments in animals which should help in a decision. We can judge most effective therapy in our animal experiments as that requiring the smallest total dose of penicillin to produce a stated curative result. In patients, it is not easy to define the criteria that should be used in determining the most satisfactory or most effective dosage schedule. The first requirement should be the cure of all cases of infection or attainment as near as possible to that ideal. In addition, the number of toxic reactions and the discomfort and inconvenience to the patient must be considered. The cost of and the requirement of the doctor's and the nurse's time in administering the treatment schedule might then be taken into consideration.

The concept of the necessity of a maintained concentration of penicillin in the blood for effective treatment appears to have been a transfer by analogy from therapy with the sulfonamides. Jawetz (*Arch. Int. Med.* **77**:1 [Jan.] 1946) showed that, where measurable blood concentrations persisted for only one hour after injection of penicillin, the depression of bacterial population in a streptococcic infection of mice persisted for at least eight hours. White and his co-workers (*Proc. Soc. Exper. Biol. & Med.* **67**:199 [Feb.] 1948) and Zubrod (Bull. Johns Hopkins Hosp. **81**:400 [Dec.] 1947) studied various schedules of penicillin dosage against a hemolytic streptococcic infection of mice and found that the survival rate was not affected by the number of fractions into which the total dose was divided nor by the interval between doses. Gibson (*Proc. Soc. Exper. Biol. & Med.* **67**:278 [March] 1948) found that the total daily curative dose of penicillin administered to mice infected with pneumococci was the same whether injections were made at 12 or at three-hour intervals. Schmidt and associates (*J. Pharmacol. & Exper. Therap.* **96**:258 [July] 1949) showed that the cure of rats infected intraperitoneally with pneumococci can be accomplished by the administration of penicillin at either frequently spaced or at widely spaced intervals. With a treatment period of 96 hours,

two, four and eight-hour dosage schedules were essentially equal in effectiveness, and each of these regimens was more effective than the 12 or 24-hour schedules. With procaine penicillin, injection at 24-hour intervals was only one-fourth as effective as aqueous penicillin at two, four and eight-hour intervals. The data showed that sustained plasma concentrations of penicillin are not at all necessary for a maximum therapeutic response.

In a further study of lobar pneumonia produced by the same Pneumococcus in the rat, Schmidt (personal communication) has found that 12 doses of penicillin at eight-hour intervals are more effective or take less total penicillin to cure than either 24 doses at four-hour intervals or 48 doses at two-hour intervals. Although Eagle has been the main proponent of the necessity of maintaining an effective concentration of penicillin in the blood for most effective therapy, in a recent paper (*Am. J. Med.* **9**:280 [Sept.] 1950) he presents data on experimental infections which do not support this opinion. In a pneumococcic infection of mice and a streptococcic infection of rabbits, his data show that, "when with a fixed total number of penicillin injections the interval between them was progressively increased, the dosage necessary for cure at first decreased to reach a minimum but thereafter again increased." Miller and co-workers (*Proc. Soc. Exper. Biol. & Med.* **74**:62 [May] 1950) using different dosage schedules of penicillin in the treatment of a penicillin-resistant S. typhosa infection in mice, found that the total amount of penicillin necessary for cure increased as the daily dose was split into more and more injections.

The last experimental investigations on the dosage schedule of penicillin mentioned above make one wonder whether intermittent dosage with aqueous penicillin may not be more effective than continuous dosage or the use of a depository preparation in many human infections. In fact, recent experience with the treatment of pneumonia with aqueous penicillin at 12-hour intervals suggests that this may be so.

Streptomycin, when first introduced into clinical use, was given every few hours from analogy to the dosage schedule of the sulfonamides. Zubrod found (*Bull. Johns Hopkins Hosp.* **82**:357 [March] 1948) that, in the treatment of mice infected with Klebsiella pneumoniae with streptomycin, there is no significant difference in results with dosage schedules of four-hour intervals or of eight-hour intervals. Feldman and Hinshaw (*Am. Rev. Tuberc.* **55**:428 [May] 1947), in a study of tuberculosis in guinea pigs, found that the administration of streptomycin at frequent intervals was not essential for successful therapy.

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[Dr. Marshall's letter was referred to the writer of the editorial, whose comment follows.—Ed.]

It seems to me that Dr. Marshall has missed the essential point of the editorial, which was that the therapeutic efficacy of penicillin appears to be measured by the total time, *not necessarily continuous*, for which it remains at effective levels at the focus of infection. The editorial did not even suggest that "a continuously maintained critical concentration of penicillin is *essential* for satisfactory therapeutic response" (italics mine), nor have I made that point in my own papers. All the data in hand indicate that penicillin cures infection primarily because it kills bacteria and that its efficacy is measured quite simply by the total time for which it is present in effective concentration. I am not clear as to just what Dr. Marshall is suggesting as an alternative thesis; but all the points he raises in his letter are wholly consistent with the editorial, and every one of the papers he cites was considered in detail in the two papers on which the editorial was largely based (*Am. J. Med.* **9**:280 [Sept.] 1950; *Ann. Int. Med.* **33**:544 [Sept.] 1950).

Dr. Marshall's letter raises three general points as militating against the therapeutic importance of the penicillin concentration:

1. Animals or human beings may be cured by treatment schedules in which there may be long penicillin-free intervals. This point was considered in detail in both of the papers cited above. As there shown, and as stated in the editorial, an intermittent schedule will be effective provided that the surviving bacteria are not given sufficient opportunity between injections to recover and remultiply: but it owes its activity to the time for which penicillin remains at effective levels. This was clearly shown in both of these papers; in pleading for experimental data, Dr. Marshall appears to have overlooked the data there given. Similarly, the fact that a fixed number of injections may be more effective if given, for example, every 4 hours than if they are given every hour was shown to follow from the longer aggregate "penicillin-time" in the former instance.

2. The fact that experiments can be set up in which a single injection is more effective than multiple injections is quite simply explained by the fact that, in an infection which is rapidly cured by penicillin (e. g., mice freshly inoculated with small numbers of pneumococci or streptococci), subdividing the single curative dose may reduce the dosage per injection to the point that an effective level is no longer provided. This is, however, a specific case which has no general validity. If the infection is such that a relatively long "penicillin-time" is required for cure, the curative dose on the divided schedule may be and usually is a minute fraction of that necessary when given in a single injection. With the same organism and with the same host, one may obtain both types of result, depending on the size of the inoculum and the age of the infection. In all cases, however, the therapeutic activity is determined by the aggregate time for which penicillin remains at effective levels. Here again, the experimental data are perfectly clearcut.

3. The time for which penicillin remains at *measurable* concentrations in the serum bears no necessary relation to the time for which it remains at *effective* levels at the focus of infection. With some organisms, susceptible only to high concentrations of penicillin, the duration of the therapeutic effect may be much less than the time for which penicillin remains at measurable concentrations; while with highly sensitive organisms, requiring less than, for example, 0.01 microgram per cubic centimeter, effective levels and a therapeutic action may persist for a much longer time than a "measurable" serum level of, say, 0.03 microgram per cubic centimeter. One can cure syphilis in rabbits with dosages of penicillin which never provide measurable serum concentrations but which do provide in the tissue fluids the effective level of 0.002-0.005 microgram per cubic centimeter.

I can only repeat that all the data in hand, including the evidence cited by Dr. Marshall, indicate that the therapeutic activity of penicillin is determined by the total time, not necessarily continuous, for which it remains at effective levels at the focus of infection. Depending on the concentrations necessary and the time required for cure, a single injection may prove more effective or far less effective than the same dose divided into multiple injections; and intermittent therapy, with long penicillin-free intervals, will be just as effective as sustained concentrations, provided that the bacteria are not given an opportunity to recover and remultiply.

MISMATCHED BLOOD TRANSFUSION

To the Editor:—In The Journal of March 31 (**145**:978) there is a clinical note on successful treatment of mismatched blood transfusion by alkalinization with sodium bicarbonate. The authors consider that this treatment is not generally known, but surely it should be known by now, as it was used for blackwater fever (where there is similar hematin blockage of renal tubules) some 30 years ago. We stressed its value in mismatched blood transfusion in a paper written in 1925 (*Brit. J. Exp. Path.* **6**:247).

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COUNCIL ON INDUSTRIAL HEALTH

DISASTER BLUEPRINT FOR THE INDUSTRIAL PHYSICIAN

The following recommendations apply to those industries of sufficient size to justify a civil defense industrial health program. If a plant does not feel able to participate because of size, location or other reason, the local civil defense administration should be consulted for advice and assistance. Each program must be tailored to meet the needs of the individual plant and integrated with the community civil defense planning.

There are two major phases of planning: (1) specific disaster control preparations by industrial physicians, and (2) general disaster control preparations by industrial physicians. It must be emphasized that both phases start *now* and proceed simultaneously.

The following should be done in preparation to make disaster effects less disabling to the civilian population in industry.

I. SPECIFIC DISASTER CONTROL PREPARATION BY INDUSTRIAL PHYSICIANS

In case of disaster, industrial management and the medical director must be prepared to meet the emergency. This can be accomplished by organizing and mobilizing a plan now, and integrating it with the community civil defense organization. Local conditions will undoubtedly influence certain details; however, the basic essentials as outlined below should act as a fundamental framework for all industrial health service planning in preparation for effectively handling a major disaster situation.

A. *Scope of Medical Service.*—The industrial medical service should be set up to act as a casualty clearing station in case of disaster so that it can cooperate with the community emergency first-aid services as outlined by the Federal Civil Defense Administration.[1] In event that the disaster directly involved a given industry, the plant medical service would administer first aid to the casualties. This would be limited primarily to splinting of fractures, controlling hemorrhage, treating shock, emergency treatment of burns, and relieving of pain. The seriously injured would then promptly be transported to designated hospitals. Next, the ambulatory casualties would be treated and sent home or to a designated hospital, depending on the severity of the injury.

The following suggestions delineate industry's role in disaster planning under four specific circumstances:

1. When a given industry is involved but not completely annihilated, and with a functioning medical unit in the plant at the time.

2. A given plant is involved as above, but a major portion of its medical staff is outside the plant at the time.

3. A given plant and its medical facilities are left intact but adjacent areas, including the homes of some of its workmen, are involved.

4. The target area is at a considerable distance from the plant in question.

Obviously, the duties of a plant's medical personnel will differ not only under each of the above circumstances, but also will vary with the size of the plant, the kind of medical service, and its relationship to a primary or secondary target area. All of these factors must be taken into consideration in planning the most effective utilization of industrial medical services in the event of disaster.

First, as to the organization of a plant medical service to meet disaster, the following suggestions are offered:

1. Every industry should draw up tentative plans for the organization of its medical defense program and submit them to its local Civil Defense authority for approval and coordination with local Civil Defense plans. Responsibility should rest with the plant's medical director who will coordinate these plans with the plant's entire defense program as well as that of the community. Plants without the regular services of a physician should contact the local Civil Defense authorities for advice.

2. Every plant with a full-time industrial physician in charge of the medical service, and particularly those which are isolated or spread over sufficient area to cause transportation to become a problem, should organize mobile first-aid units patterned after the recommendations made by the Federal Civil Defense Administration in its manual, "U. S. Civil Defense, Health Services and Special Weapons Defense."[1] These units should be capable of moving into the stricken area quickly to support the local Civil Defense units. These mobile first-aid units are in addition to the fixed medical services in the plant.

3. Smaller plants everywhere should pool their medical resources and support the organization of similar mobile units in coordination with the community Civil Defense plans.

The ability to work smoothly as a team should be fostered by frequent trial runs under simulated disaster conditions, both separately and in conjunction with local air raid drills.

The following suggestions are offered as a basis for planning the plant's medical services under the four specific circumstances mentioned above:

1. It should be recognized that should any part of a plant be involved in a disaster, and even if the medical personnel and its supplies are spared, which is unlikely, the plant's own medical staff would be wholly unable to care for the large number of casualties among its own employees. On the other hand, the rest of the community is faced with a similar overwhelming of its medical facilities for a period of time before it recovers from its initial shock and help begins to arrive from surrounding communities. Assuming that casualty collecting stations have been designated beforehand and that there is no complete breakdown of the transportation system, the primary responsibility of the plant's medical unit will be to evacuate its casualties to the clearing stations as quickly as possible. Therefore, planning should be based on providing for the inspection and classification of all casualties so that the transportation system is not bogged down with dead and dying, and so that the limited facilities of the medical department are used to greatest advantage. In general, it will probably be impossible to do more than control gross hemorrhage, relieve pain, and apply only such dressings and splints as are absolutely essential to permit the evacuation of the patient. If for any reason the casualties cannot be evacuated, the fate of the seriously injured will depend on the ingenuity and resourcefulness of the medical personnel and the speed with which essential medical supplies can be brought into the plant.

2. When a majority of the medical personnel is outside the plant at the time that disaster strikes, as might happen in a night attack, the problem is mainly one of planning for the staff to proceed to the stricken plant as quickly as possible. The smaller plants will, no doubt, depend largely on the community defense program for relief, but the larger plants with well-organized mobile first-aid stations adequately equipped and stored at a safe distance from a primary target area, should be expected to move quickly into the area. Although such units should be primarily responsible for their own plants, they should be cleared through the Civil Defense control officer who will advise them of the area of destruction, route to be used, and other instructions essential to a coordinated plan of action.

3. When the adjacent community is involved, and after all of the in-plant casualties have been treated and evacuated, the industrial medical service personnel will then be available to move into the involved community area. Whether it does so as

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This is a special report made by the Subcommittee on Defense of the Committee on Industrial Health-Defense of the Council on Industrial Health, American Medical Association. The members of the Subcommittee are Dr. Charles-Francis Long (Chairman), Bayuk Cigars, Inc., Philadelphia; Dr. Paul Bamberger, Bethlehem Steel Company, Bethlehem, Pa.; Dr. Jean S. Felton, Medical Director, Oak Ridge National Laboratory, Oak Ridge, Tenn.; Dr. Robert H. Flinn, Consultant, Health Office, Health and Welfare Division, Federal Civil Defense Administration, Washington, D. C.; Dr. Irving R. Tabershaw, Director, Eastern Medical Division, Loss Prevention Department, Liberty Mutual Insurance Company, New York, and Dr. J. F. McCahan, Assistant Secretary, Council on Industrial Health, American Medical Association, Chicago.

1. (*a*) Health Services and Special Weapons Defense, Publication Ag-11-1, Executive Office of the President, Federal Civil Defense Administration, Washington, Superintendent of Documents, Government Printing Office, December, 1950. (*b*) Manual of Industrial Hygiene and Medical Services in War Industries, edited by W. M. Gafafer, Division of Industrial Hygiene, National Institutes of Health, United States Public Health Service, Philadelphia, W. B. Saunders Company, 1943.

a mobile unit or whether each individual is assigned to other units will depend on the organization of the plant medical department and the plan of action drawn up in cooperation with the local Civil Defense authorities. If possible, the plant medical unit should be utilized by Civil Defense as a unit.

As soon as emergency casualty care has been completed in the community, the industrial medical service team should return to the plant to assist in the re-establishment of production. Disaster casualties should go to mobile first-aid stations, fixed casualty dressing stations, or their attending physician for re-dressings until such time as they are given written approval by the attending physician for return to work. They should then clear through the plant medical department unless it is completely overwhelmed by emergency work. Under these circumstances the safety supervisors or foremen should be responsible for screening the employees before they resume work. Even after the injured employees resume work, the industrial medical service may need staff assistance and supplies from the community civil defense administration if they are going to be able to assume after care re-dressings. This will allow the industrial medical service to function effectively to furnish health and emergency service to those employees who are already back on the production line.

4. When disaster strikes at some distance from the plant, it should be expected that every effort will be made to maintain production of essential materials. The plant's medical department should be expected to retain at least a skeleton staff to provide for the essential medical needs of the workmen remaining on the job. The size of this staff should be determined beforehand and all personnel not absolutely essential for a minimal medical force should be dispatched to the stricken area, either as a unit or as part of a unit, depending on the number of medical personnel available for this purpose.

B. *First Aid Training.*—Industrial management should provide first-aid training utilizing the medical service staff, safety department and/or the Red Cross to conduct the courses. The medical director should be in charge of the training and be responsible for designating a number of trained intelligent individuals as instructors who in turn should train additional instructors, depending on the size of the plant. It should be desirable for every employee to receive basic first-aid training. It is the responsibility of the medical director to determine the number of first aiders to be trained, to advise management as to these needs, and to make sure that an adequate number are trained. A minimum of 12 hours instruction should be given each employee. Each employee should be issued a small pocket-size simplified first-aid manual. Employees should be trained to work as a team, but to emphasize also, that with great numbers of casualties, it may be necessary for them to work in pairs or perhaps even individually. The fundamental purpose of first-aid is to prepare the patient for transportation in such a way that he has a chance to get to a treatment center alive and in no worse shape then he started out. No more.

First-aid teams should be established consisting of *six* persons, four of whom are physically capable of functioning as litter bearers. The two remaining members of the team should have advanced first-aid training so that they could act as team captains in supervising the work of all others who are available and qualified to help.

Litters should be provided in the following number as a minimum: [1]

1- 99 employees: 1 litter for each 25 persons
100-499 employees: 1 litter for each 50 persons (minimum 4)
500 or more employees: 1 litter for each 100 persons (minimum 10)

C. *Rescue Squads.*—This is not primarily a responsibility of the medical service. However, its work must be integrated with that of the medical staff so it is important for the two groups to coordinate their planning.

The number of these rescue teams as well as their equipment and training will depend to a great extent on the type, size and location of the plant. They should have basic first-aid training and be familiar with the potential hazards that exist within the plant as well as those that may be present in other industries in the adjacent area. They should receive basic training in the detection and de-contamination of areas affected by chemical, electrical, radiation or biological factors. The rescue squads will have to depend on monitoring teams to advise them regarding entrance into contaminated areas. In a limited number of industries monitoring teams will be established as part of the in-plant defense program; however, in most instances their service will only be available through the local civil defense administration. These monitoring teams should be advised by each plant of its needs and also informed of any hazardous materials or processes that might contaminate the area in case of disaster.

D. *Equipment and Supplies.*—1. Estimated Requirements: Requirement for one mobile first-aid station equipped to treat 500 casualties are shown in Table 4.36 and 4.37, page 57, "Health Services and Special Weapons Defense." [1a] Individual industrial health services can use these two tables as guides in selecting equipment and supplies to fit their needs as determined by size of plant and estimated casualties as determined by the method set forth in Fig. 1.48, page 16, "Health Services and Special Weapons Defense." [1a]

2. Other Equipment: This would include gas masks, oxygen resuscitation apparatus and special types of protective clothing for rescue work. The amount and type of equipment necessary would vary with the requirements of the plant.

3. Expendable Supplies: In plants where industrial medical services already exist, the supplies should gradually be increased not to exceed 20 per cent in excess of normal inventory, and only to include first-aid materials such as dressings and bandages of various types, and not to include plasma and other similar supplies.

Many industries do not have in-plant first-aid or medical services available. The Council on Industrial Health of the American Medical Association has a reprint "The Industrial Medical Department," available upon request, which is designed to act as a guide in developing a medical department in plants of various sizes. Sample floorplans are given and check lists of basic equipment and supplies are enumerated.

Supplies of certain items are already short so that rapid build-up of inventory would seriously affect the availability of current needs. The Civil Defense Administration is planning to stockpile materials on the periphery of target areas which will be moved in as needed. The industrial medical service should depend on this source of replenishing of supplies as needed at the time of disaster. Ambulances and other casualty transports should be used to bring in the supplies on their return trips from the hospitals to the disaster areas.

E. *First-Aid Boxes.*—The number of first-aid boxes should be determined by each plant as follows:

1- 99 employees: 1 box for each 25 persons
100-499 employees: 1 box for each 50 persons (minimum 4)
500 or more employees: 1 box for each 100 persons (minimum 10)

Type of Box: The inside dimensions of the box must afford a total of 540 cu. in. of space, (e. g., 10 in. by 9 in. by 6 in.) to contain the supplies listed below. A box that will resist weather and reasonably rough handling must be used. As metal becomes more scarce, weather resistant masonite, ply-wood and other similar substitutes can be used. A carrying device such as will hold the box and allow it to be slung over the shoulder or carried like a knapsack is essential so that the hands can be left free to facilitate climbing over obstacles which would be present in the disaster area.

Contents of Box: The box should contain:

Triangular bandages	12 *
Square yard of gauze mesh folded	2
3 in. by 3 in. gauze pads, individually wrapped	24
2 in. roll bandage	6
Single-edge razor blades	6
Ammonia inhalants	6
Marking pencil	1
Lipstick	1
Identification tags as specified by CDA	6
Safety pins	12

* Minimum.

Replacement supplies should be stored at strategic locations throughout the plant, preferably in shelter areas. It should be kept in mind that clean clothing, yard goods and handkerchiefs make desirable auxiliary dressing supplies. Plants with women employees should bear in mind that the common sanitary napkin makes an excellent and easily applied emergency dressing.

F. *Transportation and Communication.*—Transportation and evacuation facilities must be established within the plant and integrated with the Civil Defense planning in the community.

Communication facilities will include telephone, radio and messengers. In the event of a major disaster, telephone service would undoubtedly be interrupted so that messengers might be shared by the first-aid teams, rescue squads, demolition crews, firemen and others in keeping in touch with the plant central control officer.

II. GENERAL DISASTER CONTROL PREPARATIONS BY INDUSTRIAL PHYSICIANS

A. *Health Services Inventory.*—Make an inventory of industrial health facilities, services and personnel. This would give the civil defense administration an index of industrial health services potential and distribution.

1. Objectives: The purpose of this inventory is to obtain adequate information, whether by means of a questionnaire, inspection or both to permit a more accurate appraisal of the ability of industry's health services to meet the ordinary needs of an industrial population engaged in all-out preparation for defense. Such information is equally essential for an appraisal of industry's readiness for the extraordinary requirements of defense against attack, whether by atomic bomb, guided missile or conventional strategic bombing. Finally, it is necessary for the most effective coordination of industrial and civilian defense efforts and for the pooling of a community's resources in the event of disaster.

2. Scope: The inventory should be sufficiently broad to permit local, state and national defense authorities to access accurately each plant's ability to meet its own defense requirements and still contribute to the pooled resources of the community, the state and the nation. Although specialists in other fields will be needed, and materials and facilities other than medical should be inventoried, this inventory will be limited to medical and closely allied services.

3. Procedures: The following is suggested as essential information although by no means is the list to be considered complete or the possibilities of the questionnaire exhausted.

(*a*) Identification, location, description. This should include the name of the plant, parent company and headquarters, if any, exact location, size in terms of area covered, floor space, number of buildings or some other guide to its size, including present plant population and estimates of the maximum anticipated population based on past experience.

(*b*) Medical department personnel. Personnel should be named and described, and indicated as "on call," "part-time" or "full-time." The exact time spent in the plant by part-time physicians should be noted. The person in charge of the medical department or health services and the person (and title) to whom he or she reports should be indicated. Other medical department personnel to be listed are registered male and female nurses, industrial hygiene personnel, laboratory and X-ray technicians, practical male and female nurses, orderlies, medical secretaries, typists, clerks, ambulance drivers, and chauffeurs if under medical department supervision exclusively (not from motor pool).

(*c*) Hospitals, dispensaries, first-aid stations. The name of the hospital or hospitals to which injured employees are ordinarily taken and the approximate distance of each from the plant gates. State if there is provision made for reserving beds for employees, the number of such beds and the total number of beds in each hospital. Give the number of dispensaries and first-aid stations within the plant, the nominal floor space, number of beds, description of how each is staffed, and the average daily admissions or treatments given in each. State the number of beds or cots available on short notice for use in a catastrophe and whether stored within or outside the plant.

(*d*) Storage of medical supplies and equipment. How much expendable medical supplies are stored in the plant in terms of the estimated time in which they would normally be used? Are additional supplies and/or equipment stored elsewhere for safety? Does the plant maintain its own blood bank? How much blood, plasma, intravenous solutions, if any, are stored in the plant, in a hospital and/or elsewhere? How many litters, blankets, respirators, gas masks, first-aid kits are available in the plant or stored elsewhere? If more than one, are they distributed about the plant, or stored in a central location? Who has charge of distribution and inspection of the above equipment?

(*e*) Health and related services. State which of the following services are provided in the plant dispensaries: major surgery, minor surgery, and reduction of fractures requiring general anesthesia (intravenous or inhalation) or spinal anesthesia, suturing and dressing of minor wounds; first-aid only; pre-employment physical examinations; periodic physical examinations; pre-employment chest x-ray; periodic chest x-ray; x-ray of injured parts; other x-ray service; complete clinical laboratory service; blood typing service; simple urine and blood examinations. Which of the following related services are provided and if not by the medical department, by whom? Training in first-aid, artificial respiration, rescue, gas-mask training, litter-bearing and improvising, radiation monitoring, decontamination, demolition. Are employees trained in first-aid as teams or individually?

(*f*) Miscellaneous. Are dispensaries and first-aid stations provided with auxiliary heating and lighting facilities? Are "bomb-proof" shelters provided? Are they equipped with cots, medical supplies and auxiliary heating and lighting, to be used as clearing stations for casualties?

B. *Consultants.*—The Committee recommends that competent consultants in industrial health and hygiene be available to Civil Defense Administrations wherever organized. They would be responsible for assessing the strength of health services in the various areas through application of the health services inventory. This information would then be tabulated as to classes of industry following the pattern of breakdown already established by the National Safety Council.[2] After the surveys have been completed locally, they should then be centralized for national tabulation. Information thus assembled can function as a yardstick for an individual industry to use in assessing its needs.

All industry should have access to expert industrial health service advice as it relates to disaster planning. This should be available through the consulting service of the civil defense administration.

C. *Immunization.*—The industrial population should understand the need for an immunization program. Cooperation of press, radio, Civil Defense groups, labor unions and management as well as industrial physicians and private practitioners is needed to successfully carry on an immunization program of this scope.

Immunization against small pox, typhoid fever, paratyphoid A and B, and tetanus is urgently recommended.

Influenza and diphtheria immunizations should be administered in areas of epidemic outbreak.

In areas where certain diseases are endemic such as yellow fever and typhus and when the efficacy of immunization has been established, it should be carried out.

D. *Blood Typing.*—This Committee endorses the efforts of the Red Cross and other interested agencies to meet quotas for blood now needed for the Armed Forces and for plasma manufacture. It is a necessary effort and must not be confused with our discussion of blood typing. Regardless of present needs, this Committee strongly urges blood typing in industry *now*, beginning with the employees in large industries in and adjacent to all target areas. The purpose is to discover and tag all "O" class potential donors between 18 and 60 years of age. In this way there will be set up a "walking blood bank" so that without worry concerning storage, viability or erythrocyte freshness, physicians will have at hand immediately a huge pool of available blood carried in the veins and arteries of the "O" group survivors. We know that if disaster strikes any of our industrial centers the need for blood within the first four or five days will be so astronomical that creating this "walking blood bank" is the only answer our Committee can conceive to the solution of the problem.

We would warn those officials in Civilian Defense responsible for providing blood that they must move now to store blood-letting apparatus on the periphery of target areas and set up classes to train nurses, technicians, and possibly even nurses' aides in the techniques of blood collecting.

2. National Safety Council, Chicago.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Sherman Anti-Trust Act in Relation to Medical Society Sponsored Prepaid Medical Care Plan.—The United States filed an action against the Oregon State Medical Society, the Oregon Physicians' Service, and a number of individual physicians to restrain the alleged violation by the defendants of the Sherman Anti-Trust Act. The case was heard in the United States District Court, District of Oregon.

The government contended that the defendants, beginning in about 1936, conspired to restrain and monopolize prepaid medical care in the State of Oregon, and that they did restrain and monopolize the prepaid medical business in the areas in which they operated. The following findings of fact, among others, were made by the trial court.

The Oregon Physicians' Service is a corporation incorporated under the laws of the State of Oregon, having its office and principal place of business in Portland and it furnishes prepaid medical, surgical, and hospital care on a prepaid contract basis. It is sponsored and approved by the Oregon State Medical Society and the great majority of its stockholders and participating physicians are members of that society. None of the defendants, either at any of the times set forth in the complaint or at any other time, have attempted to, or have been engaged in any combination or conspiracy to, restrain or monopolize the business of selling or furnishing prepaid medical care in the state of Oregon or elsewhere or to restrain or monopolize interstate trade or commerce in said business: Prior to 1941, some of the defendants advised doctors not to cooperate with commercial prepaid medical care organizations in certain practices engaged by them, but such action was not the result of any conspiracy or combination or attempt to restrain or monopolize the business of prepaid medical care, but was for the purpose of maintaining the standards of medical practice. Prior to 1941 the defendant Multnomah County Medical Society expelled certain members who were associated with certain types of contract practice and threatened the expulsion of other members so engaged, but such action was not the result of any combination, agreement or conspiracy in restraint of trade or commerce or otherwise; it was for the purpose of maintaining and advancing the standards of medical practice. No other defendant has ever expelled, threatened or incited the expulsion from medical societies of any doctors because of any cooperation in prepaid medical care plans, and since 1941, none of the defendants has expelled, threatened or incited the expulsion from medical societies of doctors cooperating in medical plans other than those sponsored by the defendants. The defendants have formed and promoted certain prepaid medical care plans, but such action on the part of the defendants was not pursuant to any conspiracy, combination or attempt to restrain or monopolize trade or commerce and was not with the intent to drive out, hinder and obstruct commercial prepaid medical care plans operating in the State of Oregon, but it was with the intention to legitimately compete with such commercial medical care plans. None of the defendants at any time has interfered with, or attempted or combined or conspired to interfere with, commercial prepaid medical care organizations in obtaining hospital facilities for their members. None of the defendants at any time has refused to treat patients or caused others to refuse to treat, or combined or conspired to refuse to treat any patients who were members of any prepaid medical care plan, or discriminated against any such patients by reason of such membership.

Oregon Physicians' Service was intended to be an agency, and has in fact been an agency, to provide a prepaid medical care plan in Oregon by a doctor-sponsored group in areas where such a plan had not yet been organized by the local doctors, and in cases where groups of patients live or work in more than one county, and in cases where the local doctors' plan has not yet provided for auxiliary contracts, such as "family contracts" or "individual contracts." Oregon Physicians' Service provides for medical and hospital care, in one form or another, in every county in Oregon. Most of the doctors participating in the local doctor-sponsored plans are also participating physicians of Oregon Physicians' Service. No local plan of prepaid medical care sponsored by doctors of any county has attempted to sell contracts for prepaid medical care in other counties without the consent of the doctors in such counties who would render the services provided in said contracts. The reasons for these policies are, first, that defendants believe that doctors should not attempt to sell the services of other doctors without their consent, and, second, competition between two doctor-sponsored plans in a single county is impractical, since the same doctors must render services under whatever plans are in operation. These policies and the carrying out of these policies have not been a result of any conspiracy or combination in restraint of trade or commerce and have not resulted in restraining or monopolizing the business of selling or furnishing prepaid medical care.

Defendant medical societies are voluntary associations and membership or nonmembership in any of defendant societies has no effect on the privilege to practice medicine in Oregon under state laws. Membership on a hospital staff in Oregon is granted or withheld by the governing body of the particular hospital and has not been granted or withheld from any doctor because of his connection with any prepaid medical care organization, whether such organization was sponsored by defendants or not. No doctor has been deprived of any staff membership in any hospital in Oregon because of his connection with any prepaid medical care organization not sponsored by defendants.

The practice of medicine as conducted within the State of Oregon by doctors of Oregon, including defendants, and the sale of medical services, by doctor-sponsored organizations, as conducted within the State of Oregon, are not trade or commerce within the meaning of Section 1 of the Sherman Anti-Trust Act, nor is it commerce within the meaning of the constitutional grant of power to Congress "To regulate Commerce . . . among the several States."

Some or all of the defendants have participated in the preparation and promulgation of schedules of fees to govern charges to be made by doctors in the furnishing of medical and surgical care provided in connection with (1) the prepaid medical care plans of Oregon Physicians' Service and other doctor-sponsored prepaid medical care plans in the State of Oregon, and (2) activities of certain governmental agencies, at the request of such agencies. The schedules of fees used in connection with Oregon Physicians' Service and other doctor-sponsored prepaid medical care plans do not themselves necessarily set forth the actual fees to be collected by doctors, but instead determine the relative proportions of the net profits of such prepaid medical care plans, during any given period of time, to be received by doctors for specified medical services. Doctors participating in said plans agree to accept compensation for services based upon a percentage of the amount available for distribution to doctors after deduction of hospital charges and other expenses.

Except in connection with the rendering of services under said prepaid medical care plans or governmental activities, there has been no attempt by any of the defendants to fix or designate fees or charges to be made by doctors in Oregon in the rendering of medical or surgical services. The fixing of fees is a necessary element and of the very essence of all prepaid medical care plans, whether doctor-owned or privately owned, and all prepaid medical care organizations in Oregon, including commercial companies, fix or designate or determine fees for services under or pursuant to or in cooperation with said plans. In the case of doctor-sponsored prepaid medical care organizations, the purposes of these fee schedules are as stated above; and in the case of commercial organizations, the schedule of fees designates either (1) the amounts to be paid for specified services, or (2) the maximum amounts of indemnity to be paid members of or subscribers to said organizations for fees paid or incurred by them for medical or surgical services.

The expression to "take tickets" means that a doctor rendering services to a member of a prepaid medical care plan sends his statement for services to the corporation or other organization owning or controlling said plan, and accepts checks from said organization. There is no present conspiracy, combination, agreement or concert of action among doctors not to "take tickets" of privately owned hospital associations; nor is there

any conspiracy, combination, agreement or concert of action among doctors not to accept payment from privately owned hospital associations. The refusal by doctors to "take tickets" of or accept payment from privately owned associations is not boycott.

On the basis of all the evidence, the trial court concluded that none of the government's charges were proven by a preponderance of the evidence. The question, said the trial court, was whether the Oregon doctors in the formation of their own prepaid nonprofit organization, Oregon Physicians' Service, have violated the Anti-Trust laws. As competitors of the privately owned for profit organizations in the same field, have the doctors transgressed the bounds of legitimate competition? I hold that they have not, said the court. The period from 1936 to 1941 was a period when the doctors were trying to find themselves. It was a defensive period. The doctors felt that they were being exploited. They were trying to maintain their professional standards. They felt the doctor-patient relationship was being destroyed. It was a period of groping for the correct position to take to accord with changing times. The doctors sponsored their own prepaid plan and then repudiated it. What the doctors did during this period was not conspiracy. I really doubt, the trial court continued, that the government believed the operations of Oregon Physicians' Service to be monopolistic. Its two chief competitors are tremendously profitable; they have the cream of the business, going only into selected areas, whereas, Oregon Physicians' Service must go everywhere and has many other weaknesses, inheritant cooperative enterprise. I hold, concluded the trial court, that Oregon Physicians' Service is not a conspriacy, but, rather, an entirely legal and legitimate effort by the profession to meet the demands of the times for broad medical and hospital service, eliminating the evils of privately owned concerns, as well as the element of private profit.

Accordingly the trial judge entered an order in favor of the defendants and dismissing the plaintiff's complaint with prejudice.—*United States v. Oregon State Medical Society, 95 F. Supp. 103 (1950).*

Hospitals: Broken Needle Left in Patient's Arm by Nurse.—This was an action by the plaintiff to recover damages for the alleged negligence of nurses employed by the defendant hospital, a private institution operated for profit. From a judgment in favor of the plaintiff, the defendant hospital appealed to the Supreme Court of Mississippi.

The plaintiff became ill with gastritis and was sent to the defendant hospital. Among other treatments which her physician prescribed for her were several injections of glucose into her body every 24 hours. These infusions were given to the plaintiff by nurses employed by the defendant. The glucose was obtained by the hospital in a bottle ready to be administered to the patient. The nurses, when giving this substance to a patient, would use a rubber tube, at one end of which was a hollow metal tube to be inserted through the cork in the mouth of the jug containing the glucose which was then inverted and placed on a stand above the patient. The other end of the rubber tube had a place for a hollow hypodermic needle. The patient's arm would be immobilized by placing it on a board and strapping it down with adhesive tape, after which the needle would be injected into the arm in the cubital area on the inside of the arm near the elbow. After the injection of the needle, adhesive tape would be placed at this point to hold the needle in place and the glucose inserted into the patient's veins by a drip method. After the prescribed amount of glucose had been administered, the nurse would remove the needle, clean it out with a syringe and send it to a central place where it would be sterilized for future use.

After the plaintiff left the hospital, the place on her left arm where these injections had been made continued to be sore, swollen, with a strong, unpleasant odor and great pain. Four days later her physician treated the plaintiff's arm for the infection, and in succession two other doctors treated her. At the time one of these physicians checked her arm she was in another hospital as a paying patient. He testified that the plaintiff was suffering from an infection consisting of a superficial ulcer in her arm and that when he prepared to change the dressing on it he observed an ulcerated part in the cubital area opposite the elbow about the size of a dime. He stated that "on top of the crust of that area was a metallic object" which "was visible when the dressing was removed" and that he "took a pair of little tweezers and lifted off" the crust. The physician then gave this needle to the plaintiff and the broken piece of hollow needle, about ½ in. in length, was introduced as an exhibit at the trial.

The testimony of the plaintiff's witnesses, not disputed, was that the plaintiff had never had, prior to the infusions in the defendant hospital, any trouble with her arm, nor any injections by needles in her arm, and that after being discharged from the hospital the plaintiff had no such injections. The only persons who had made injections by needle into her arm were the employees of the defendant during the time she was a patient in the defendant hospital. The defendant hospital introduced its hospital records and six nurses who had made them and had administered the glucose infusions to the plaintiff. All of them testified that during none of the infusions had they observed a broken needle. They were not able to identify who had terminated one particular infusion, however. They also testified that they had never seen an infusion needle broken.

There was no dispute, said the Supreme Court, that the piece of needle was removed from the plaintiff's arm, and the jury could well have believe that in the month after leaving the hospital the needle had moved to the surface of the ulcer and finally become visible. The other substantiating evidence, the court continued, was enough to warrant a finding that the needle was inserted and broken off in the plaintiff's arm, by an act of the defendant's servants in the hospital, and that either it was negligently broken off in her arm by the defendant's servants or the defendant was negligent in failing to ascertain that the needle had broken there and in failing to remove it or to advise the plaintiff thereof, or both. The defendant argued that there was no direct testimony, by any eyewitness, of the breaking of the needle in the plaintiff's arm. The Supreme Court said, however, that negligence of this type seldom can be proved by such direct evidence. Circumstantial evidence which offers a reasonable probability of correctness is adequate to support the verdict, the Supreme Court concluded. On the basis of all the evidence, therefore, the judgment of the trial court in favor of the plaintiff was affirmed.—*General Benevolent Association Inc. v. Fowler, 50 So. (2d) 137 (Mississippi, 1951).*

MEDICAL MOTION PICTURES

Guard Your Heart: 16 mm., black and white, sound, showing time 29 min. Prepared by the American Heart Association. Produced in 1951 by and procurable on purchase from Bray Studios, Inc., 729 Seventh Ave., New York 19.

This motion picture tells the story of Sam Taylor, a middle-aged, hard-driving executive. One day he experiences pain in the region of his heart; later he has a nightmare in which his heart talks to him and reproaches him. He is persuaded by his wife to see their family doctor, who cautions him to change his pace and, before making his examination, gives him a lecture about the heart. During this lecture, animated sequences are interspersed with live photography to illustrate the power and endurance of the heart, the way in which it performs its task of circulating the blood, and what takes place in arteriosclerosis and coronary thrombosis. There is also a brief discussion of other heart diseases. The concluding section shows Sam a changed man. He is relieved to learn that nothing is seriously wrong with his heart and that his symptoms are warning signals that he has been going too fast.

This film motivates the individual to live with his heart instead of fighting it, and it also teaches some physiology. However, the physiology, which is explained during the doctor's lecture, would be more meaningful if there were less narration and more visual illustrations. This sequence contains enough material for a film in itself. The suggestion of the producer that a discussion leader prepare his audience for the showing of the film and be ready to answer many questions after the showing is well made. The film is recommended for showing to adult lay audiences, especially persons in or approaching middle age. The photography and sound are good.

MEDICAL LITERATURE ABSTRACTS

AMERICAN

American Journal of Medical Sciences, Philadelphia

221:359-478 (April) 1951

Laboratory Diagnosis of Hyperthyroidism: Practical Analysis of Current Methods, with Presentation of Illustrative Cases. J. D. Hardy and C. Riegel.—p. 359.
Gastric Secretory Response to Insulin Hypoglycemia: Influence of Insulin Dosage and Blood Sugar Level. P. R. Sharick and D. A. Campbell. —p. 364.
*Vitamin D Intoxication. H. Chaplin Jr., L. D. Clark and M. W. Ropes. —p. 369.
Serum Lipids in Lipemia Retinalis. S. C. Carfagno and W. A. Steiger. —p. 379.
*Role of Ketone Bodies in Etiology of Diabetic Coma. P. Fisher.—p. 384.
Combined Salicylate and Para-Aminobenzoic Acid (Pabalate®) in Treatment of Rheumatoid Arthritis. J. L. Hollander and T. N. Harris. —p. 398.
Correlation of Erythrocyte Sedimentation Rates as Determined by Rourke-Ernstene and by Wintrobe-Landsberg Methods. E. A. Mahoney Jr., J. Worcester and B. F. Massell.—p. 402.
Relation of Sodium Chloride Depletion to Urine Excretion and Water Intoxication. W. R. Bristol.—p. 412.
Evaluation of Cuirass Respirator in Acute Poliomyelitis with Respiratory Insufficiency. F. Plum and D. S. Lukas.—p. 417.
Clinical Implications of Pressures Used in Body Respirator. J. V. Maloney Jr. and J. L. Whittenberger.—p. 425.
Mitral Stenosis Without Clinically Demonstrable Left Auricular Enlargement. S. Pariser, J. Zuckner, H. K. Taylor and W. J. Messinger. —p. 431.
Febrile Reactions to Quinidine. W. H. Stimson and V. A. McKusick. —p. 440.
Role of Liver in Detoxification of Tetraethylthiuram Disulphide (Antabuse). E. M. Boyd and C. J. Kingsmill.—p. 444.
Hemolytic Anemia Associated with Liver Disease. G. A. Hyman and H. Southworth.—p. 448.
Temporomandibular Articulation Syndrome. C. M. Epsteen.—p. 457.
Some Aspects of Berylliosis. H. Beerman.—p. 462.

Vitamin D Intoxication.—The literature contains reports of 111 cases of hypervitaminosis-D. The syndrome consists of weakness, fatigue, and weight loss in general; nausea, vomiting, diarrhea, abdominal cramps; headache, paresthesia, and vertigo; depression, mild psychosis, and stupor; normocytic, normochromic anemia; albumin, red blood cells, casts in the urine, with progressive impairment in concentrating ability; frequency and nocturia; band keratitis; elevated serum calcium and phosphorus, with normal or slightly elevated alkaline phosphatase; progressive nitrogen retention; diffuse demineralization of the bones in advanced cases, and periarticular soft tissue calcification. Depending on the severity of intoxication, all or only a few of the above described findings will be present, as indicated in the authors' seven additional cases, which are described in some detail. Six of these patients exhibited band keratitis, a lesion commonly associated with disturbed calcium metabolism. The two most serious of the seven cases were remarkable for the demonstration of calcium-containing cysts, which were located largely in the periarticular areas and in the vicinity of the bursae. These cysts were fluctuant, did not transilluminate, and varied from 1.5 to 8 cm. in diameter. The calcium-phosphorus ratio of the sediments centrifuged from the aspirated fluid of the cysts was more than twice that present in bone. Treatment of the patients consisted of cessation of vitamin D intake, a strict low calcium diet, avoidance of undue exposure to sunlight, avoidance of alkali, maximum mobilization of the patient, and sufficient fluid intake for a daily urinary output of at least 2,000 cc. Some of the patients were given diethylstilbestrol. Vitamin D is a potentially dangerous drug and should be used only in diseases in which there is a reasonable rationale for usage. If it is used in massive doses, careful follow-up is obligatory for early detection of signs of intoxication.

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Titles marked with an asterisk (*) are abstracted.

Ketone Bodies in Etiology of Diabetic Coma.—There is still no general agreement as to the specific cause of coma that results from uncontrolled diabetes mellitus. Almost all authors agree that all three of the ketone bodies can have toxic effects if given in large enough doses, and some observers have demonstrated specific effects on the respiratory and other brain centers. Of the three ketone bodies, acetoacetic acid is most toxic, beta-hydroxybutyric acid is less toxic and is in equilibrium with acetoacetic acid, and acetone is a decomposition product with low toxicity. Whether they are toxic in the concentration in which they appear in the blood of patients with diabetic acidosis is unknown. The length of time they are present may be an important factor. A blood ketone level in animals of 100 mg. per 100 cc. may have no effects over a few hours but might be highly toxic if it were maintained for a week. The fact that ketosis is an absolutely constant finding in diabetic acidosis points to a strong relationship between the two. If the ketone bodies are the dominant factor in the production of coma, then some reasonable correlation should exist between the blood ketone level and the clinical state. The author's experiments showed that hyperketonemia can be produced in rabbits in the range observed in diabetic acidosis in man and maintained for several hours without apparent toxic effect. On the other hand, hypertonic saline solution of about three times the tonicity of plasma caused the death of all the animals to whom it was given. In contrast to Schneider and Droller the author believes that death was the result of the hypertonicity of the solution infused and not of the specific agent or quantity of the agent infused. In 25 cases of diabetic acidosis selected from the literature and from the author's practice, there was poor correlation of the blood ketone level with the clinical condition during therapy. Although the general trend of the ketone level was back toward normal limits this may have coincided with, rather than caused the improvement. Even if there were good correlation and good evidence of ketone toxicity, the fact that a substance can be toxic does not necessarily mean that it causes a particular clinical syndrome. It is highly unlikely that the ketone bodies are the primary cause of the clinical picture of coma. It seems more reasonable that they indicate metabolic disturbances without being toxic, just as the blood urea is a nontoxic indicator of uremia.

American Journal of Ophthalmology, Chicago

34:339-508 (March) 1951

Primary Vaccinia of Eyelids: Treatment by Aureomycin. J. H. King Jr. and W. A. Robie.—p. 339.
Roentgen Therapy of Ocular Vaccinia. O. R. Kline Jr.—p. 342.
Topical Cortisone in Treatment of Anterior-Segment Eye Disease. E. H. Steffensen, A. J. Wishbow, F. O. Nagle and others.—p. 345.
Cortisone in Treatment of Phlyctenular Keratoconjunctivitis. P. Thygeson and M. H. Fritz.—p. 357.
*Local and Systemic Cortisone in Ocular Disease. I. H. Leopold, J. E. Purnell, E. J. Cannon and others.—p. 361.
Unilateral Exophthalmos as Forerunner of Thyrotoxicosis. S. L. Saltzman and M. C. Mellicker.—p. 372.
Practical Considerations Concerning Choice of Operation in Convergent Squint: Edward Jackson Memorial Lecture. P. A. Chandler.—p. 375.
Some Ophthalmic Aspects of War Pathology. G. Bietti.—p. 382.
Solitary Tuberculoma of Sclera in Patient with Multiple Advanced Systemic Lesions: Treated with Streptomycin. S. D. Maiden.—p. 387.
Ocular Tuberculosis Treated with Streptomycin: Report of 14 Cases. P. J. Parisi.—p. 393.
Further Studies in Relationship Between Heterophoria and Prism Vergence. R. G. Scobee and E. L. Green.—p. 401.
Ocular Mucormycosis: Report of Case. J. A. C. Wadsworth.—p. 405.
Clinical and Experimental Studies with Tissue Scrapings in External Ocular Diseases: With Additional Reference to Use of Antihistaminics in Herpes-Simplex Infections. J. W. Hallett.—p. 409.
Limbus Tumors as Manifestation of von Recklinghausen's Neurofibromatosis in Goldfish. H. G. Schlumberger.—p. 415.
Accommodative-Effort Syndrome: Pathologic Physiology. R. V. Hill. —p. 423.
Intraocular Biopsy. C. A. Veasey Jr.—p. 432.

Local and Systemic Cortisone in Ocular Disease.—Leopold and his associates analyze the effect of cortisone therapy on various forms of ocular disease. The drug was administered in suspension subconjunctivally and retrobulbarly. One or both of these methods were used in 142 eyes. Systemic therapy was subsequently tried in 10 of the cases in which local therapy failed.

Cases of allergic conjunctivitis, vernal conjunctivitis, corneal ulceration, dendritic keratitis, chemical keratitis, nonsyphilitic atypical interstitial keratitis, marginal ulcers, superficial keratitis, anterior uveitis, and sclerosing keratitis improved with local administration of cortisone. Therapy did not result in complete cure in all the cases. Relapses were frequent. The results of subconjunctival cortisone in posterior uveitis were unsatisfactory. In two cases of posterior uveitis treated by retrobulbar injection there was no significant improvement. No improvement was obtained in cases of ocular pemphigus, erythema multiforme, corneal dystrophy, congenital syphilitic interstitial keratitis, uveitis due to Boeck's sarcoid, Vogt-Koyanagi syndrome, and Harada's disease. No improvement was noted in cases of juvenile and senile macular degeneration following local or systemic cortisone therapy. Retrobulbar administration of cortisone was unsuccessful in macular degeneration and was of questionable value in posterior uveitis and retrobulbar neuritis. In 25 patients cortisone eye drops were used alone, in association with, or following subconjunctival injections of cortisone. These cases included patients with anterior uveitis, scleritis with keratitis, deep keratitis, anterior uveitis following surgery, and one patient with atypical interstitial keratitis. These patients improved following treatment with cortisone subconjunctivally, then relapsed and improved again when cortisone suspensions in drops were started. Topical cortisone used alone was helpful in allergic conjunctivitis, vernal conjunctivitis, and superficial punctate keratitis. In no case in which subconjunctival injections were unsuccessful were subsequent topical cortisone drops beneficial. Systemic administration of cortisone was more successful than subconjunctival cortisone in the treatment of posterior uveitis and of diseases of the anterior segment. Some patients improved only while cortisone was being administered and another group improved only for a while with cortisone therapy but failed to benefit from repeated and continued therapy. There is no method at present by which the permanency of cortisone therapy can be predicted. It is apparently not helpful in degenerative conditions such as dystrophy and macular degeneration. Its chief benefit seems to be in cases with active inflammatory processes.

American Journal of Pathology, Ann Arbor, Mich.

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Biologic Effects of Radioactive Phosphorus Poisoning in Rats. S. Koletsky and J. H. Christie.—p. 175.

Changes in Endocardium of Pigs Simulating Rheumatic Stigmata of Man. O. Saphir and M. Lowenthal.—p. 211.

Glandular Adipose Tissue Associated with Cytotoxic Suprarenal Contraction and Diabetes Mellitus. G. L. Laqueur and M. B. Harrison. —p. 231.

Asymptomatic Focal Arteritis of Appendix: Eighty-Eight Cases. A. Plaut. —p. 247.

Cell Type of Secondary Parathyroid Hyperplasia. G. E. Fritz and O. A. Brines.—p. 265.

*Allergic Granulomatosis, Allergic Angiitis, and Periarteritis Nodosa. H. Churg and L. Strauss.—p. 277.

Post-Traumatic Subcutaneous Granulomas Associated with Crystalline Material. W. W. Ayres, W. B. Ober and P. K. Hamilton.—p. 303.

Giant Cell Foreign Body Reaction to Non-Cholesterol Lipid Plate Crystals: Case Report with Chemical Studies. R. L. Engle Jr.—p. 317.

Glycogen Infiltration (So-Called Hydropic Degeneration) in Pancreas in Human and Experimental Diabetes Mellitus. W. E. Toreson.—p. 327.

Allergic Granulomatosis and Vascular Disease.—A clinical syndrome of severe asthma, fever, and hypereosinophilia, together with symptoms of vascular embarrassment in various organ systems, is described, and observations on 13 cases are reported. The basic anatomic changes in these cases consisted of widespread vascular lesions of the type seen in periarteritis nodosa and of characteristic tissue alteration in the vessel wall and in the extravascular collagen system. The tissue alteration found in these cases consisted of necrosis of eosinophilic exudate, severe "fibrinoid" collagen change, and granulomatous proliferation of epithelioid and giant cells. This is considered a histopathological entity and is designated as allergic granuloma. The granulomatous lesions, both within vessel walls and in connective tissue throughout the body, suggest that this syndrome constitutes an entity apart from classic periarteritis nodosa. This assumption was corroborated by review of 15 cases of periarteritis nodosa without asthma, none of which revealed extravascular granulomas or granulomatous vascular changes. Cutaneous and subcutaneous nodules showing the typical connective tissue alteration are frequent in this syndrome. These are of value for diagnosis by biopsy. Granulomatous lymphadenitis is probably also of diagnostic significance. It is suggested that other allergic syndromes (Loeffler, Zuelzer, Šikl) may represent the more benign forms of allergic granulomatosis, while angiitis is its most malignant manifestation.

American Journal of Public Health, New York

41:375-496 (April) 1951

Public Health Nurse's Bookshelf. D. Deming.—p. 375.

Further Evaluation of Astoria Plan of School Medical Services in New York City Elementary Schools. A. Yankauer.—p. 383.

Variations in Age Selection of Poliomyelitis Associated with Differences in Economic Status in Buffalo, N. Y., 1929, 1939, 1944 and 1949. W. R. Ames.—p. 388.

Evaluation of County-Wide DDT Dusting Operations in Murine Typhus Control (1946 Through 1949). E. L. Hill, H. B. Morlan, B. C. Utterback and J. H. Schubert.—p. 396.

Medical Care of Maternity Patients Under Emergency Maternity and Infant Care Program in New York City. V. Pessin, H. M. Wallace and L. Baumgartner.—p. 402.

Distribution of Costs Under Emergency Maternity and Infant Care Program, with Special References to Costs of Maternity Care in New York City. V. Pessin, L. Baumgartner and H. M. Wallace.—p. 410.

Relation of Nutrition to Susceptibility to Toxic Substances. M. E. Shils. —p. 417.

Proposed Report on Educatjonal and Experience Qualifications of Administrative Personnel (Non-Medical) in Public Health Agencies. L. E. Burney, R. M. Atwater, V. A. Van Volkenburgh and others.—p. 424.

Residency Training for Medical Health Officers by State Health Departments. F. B. Amos.—p. 430.

Is There a Science of Personnel Selection? Selecting Public Health Administrators. M. M. Mandell.—p. 434.

Preliminary Report on Study of Blood Sugar Screening Levels. H. L. C. Wilkerson and B. Glenn.—p. 440.

American Review of Tuberculosis, New York

63:365-500 (April) 1951

Teaching of Tuberculosis in Medical Schools. G. C. Robinson.—p. 365.

Correlation of Biologic Properties of Strains of Mycobacterium with Infra-Red Spectrums: I. Reproducibility of Extracts of M. Tuberculosis as Determined by Infra-Red Spectroscopy. H. M. Randall, D. W. Smith, A. C. Colm and W. J. Nungester.—p. 372.

*Role of Bronchi in Pulmonary Tuberculosis: Review Based on Study of 305 Cases. R. S. Jones and F. H. Alley.—p. 381.

Bronchogenic Carcinoma as Differential Diagnostic Problem in Pulmonary Disease: III. Peripheral Type: Carcinoma Arising from Minor Bronchi and Bronchioles. J. H. Moyer and A. J. Ackerman.—p. 399.

Benign Spontaneous Hemopneumothorax. L. Hyde and B. Hyde.—p. 417.

*Neomycin in Clinical Tuberculosis. D. T. Carr, K. H. Pfuentze, H. A. Brown and others.—p. 427.

*Tuberculostatic Activity of Terramycin. G. L. Hobby, T. F. Lenert, M. Donikian and D. Pikula.—p. 434.

Chemotherapy of Actinomycosis and Nocardiosis. R. E. Strauss, A. M. Kligman and D. M. Pillsbury.—p. 441.

Demonstration of Streptomycin-Resistant Tubercle Bacilli in Necropsy Specimens. E. M. Medlar, S. Bernstein and F. C. Reeves.—p. 449.

Evaluation of Media for Diagnostic Cultures of Tubercle Bacilli. I. Melvin, G. C. Klein, W. Jones and M. M. Cummings.—p. 459.

Clinical Comparison of Several Culture Media in Diagnostic Demonstration of Tubercle Bacilli. C. R. Smith.—p. 470.

Sensitivity to Tubercle Bacilli to Amithiozone (Myvizone). M. Mollov, I. Hill and T. J. Kott.—p. 487.

Bronchi in Pulmonary Tuberculosis.—The morphological forms, incidence, and pathogenesis of bronchial tuberculosis are discussed. A relatively high incidence of endobronchial tuberculosis has been found on bronchoscopic examination of patients hospitalized for pulmonary tuberculosis. Bronchial tuberculosis appears to be more frequent in females and is generally considered to be secondary to parenchymal disease. The authors believe that the initial bronchial disease probably arises by implantation from a parenchymal lesion or from extension of adjacent disease and then spreads along the submucosa. Pronounced tuberculous bronchitis unassociated with an evident parenchymal lesion may occur. Pulmonary tuberculosis often

appears as nodular "tubers" connected to both proximal and distal bronchial "roots." The proximal or larger bronchi are frequently stenosed, while the distal or smaller bronchi are occasionally dilated but are oftener destroyed by tuberculous disease. Atelectasis and varying degrees of fibrosis, plasma exudation, and alveolar macrophage accumulation and scattered tubercles accompany this peripheral bronchial disease. Pyogenic, nontuberculous responses are unusual, and nontuberculous bronchopneumonia is rarely found. Lesions of the smaller bronchi are often more numerous and severer than those of the larger bronchi. Tuberculosis of the large bronchi occurs most frequently in association with cavitation and sputum containing tubercle bacilli but occasionally may occur without detectable parenchymal lesions. Proximal bronchial disease may be important in the closure of cavities or in the production of a "blocked" cavity, in the "ballooning" of cavities, or in the production of emphysema. The presence of such bronchial lesions may account for the failure of some diseased lobes to collapse with thoracoplasty.

Neomycin in Tuberculosis.—Five patients with tuberculosis due to streptomycin-resistant tubercle bacilli and one with far advanced tuberculosis of the lungs and carcinomatosis were treated with 0.25 to 1.0 gm. of neomycin containing 200 Waksman units per milligram every 12 hr. for 29 to 52 days. The most important toxic reaction was the development of deafness in four of the six patients during the fourth to sixth week of treatment. This progressed to almost complete deafness although treatment with neomycin was discontinued immediately. All six patients showed signs of renal damage during neomycin therapy; however, the renal function rapidly returned to normal when administration of the drug was stopped. Three of the six patients reported a decrease in cough and expectoration during the period of neomycin treatment. In one instance, the patient's cough cleared completely and she ceased to expectorate. Roentgenographic evidence of improvement was established in only one of these three. Tubercle bacilli recovered at postmortem examination from one of the kidneys of a patient who died after 41 days of treatment were found to be resistant to neomycin in a concentration of 1,024 units per cubic centimeter of culture medium. Tubercle bacilli recovered from the lungs, spleen, liver, and omentum, however, were found to be sensitive to 1.0 unit or less of neomycin per cubic centimeter of culture medium. Neomycin in sufficiently large doses is a potent antibacterial agent against the tubercle bacilli in experimental tuberculosis in animals. In the present study, suggestive indications of antimicrobial effect were observed in the one patient who received the largest daily dose (2.0 gm.) of the drug. The other five patients, who received a smaller dose of neomycin, had only symptomatic benefit and the postmortem examination in one case revealed no evidence of suppression of the disease. The toxic reactions to neomycin render the particular preparation of the drug studied of little or no clinical value in tuberculosis, even if the smaller doses used in this study were therapeutically effective. Whether the toxic reactions were due to neomycin itself or to something else in the material is not known. The recovery of neomycin-resistant tubercle bacilli from one of the kidneys of a patient after 41 days of treatment suggests that tubercle bacilli become resistant to neomycin as readily as to streptomycin.

Tuberculostatic Activity of Terramycin.—The sensitivities, in vitro, of a number of human strains of tubercle bacilli to terramycin and its salts were determined. Four to 16 γ of pure terramycin per milliliter of medium were sufficient to inhibit growth of these strains. Terramycin was found to be no more active than aureomycin against tubercle bacilli, in vitro. Terramycin is active against both streptomycin-sensitive and streptomycin-resistant strains. This suggested that terramycin might be especially effective when used in combination with streptomycin or other antituberculous agents. In vitro studies have shown that one-fifth to one-tenth of the amount of terramycin required for inhibition of growth significantly decreases the concentrations of streptomycin, viomycin, and aureomycin necessary for inhibition of growth. The effect on the concentration of chloramphenicol or penicillin necessary for inhibition of growth was less pronounced. No change in the amount of neomycin required for inhibition of growth was observed. Terramycin exerts a bactericidal effect only if high concentrations are used. Organisms resistant to its action emerge from otherwise sensitive strains at an exceedingly slow rate. None of the five strains of Mycobacterium tuberculosis tested showed any significant increase in resistance during 12 transfers in liquid medium that contained subinhibitory concentrations of terramycin. Studies on the chemotherapeutic action of terramycin against tuberculous infections were carried out in mice infected intracerebrally. In a rapidly progressing infection, in which the average survival time of the untreated control animals was 24 days, a dosage equivalent to 8.6 mg. of terramycin per 20-gm. mouse was sufficient to increase the average survival time to 120 days. Lower doses of the sodium salt of terramycin, equivalent to 1.1 to 2.2 mg. per day, were sufficient to cause an approximately three-fold to four-fold increase in survival time. Terramycin, in both its amphoteric form and its sodium salt, was effective in suppressing this infection. The activity of terramycin in vitro and in vivo against streptomycin-resistant strains of tubercle bacilli and its low toxicity suggest that this agent may be therapeutically valuable.

American Surgeon, Atlanta, Ga.

17:175-270 (March) 1951

Intrahepatic Cholangiojejunostomy with Partial Hepatectomy for Biliary Obstruction. E. B. Hay, G. W. Waldron and J. G. Heard.—p. 175.
*Benign Lesions of Cervix: Study of 226 Cervical Stumps. C. G. Collins, G. T. Schneider and W. J. Baggs.—p. 180.
Sacrococcygeal Teratomas: Two Case Reports. C. B. Wright.—p. 196.
Gastric Resections and Vagotomies, Morbidity and Mortality in General Hospital, Not Associated with Teaching Center. J. S. Stewart.—p. 202.
Recurrent Pancreatitis. H. D. Cogswell.—p. 209.
Hemangiosarcoma (Hemangio-Endothelioma) of Stomach. H. H. Kerr and E. A. Gould.—p. 218.
Familial Urological Diseases. A. E. Goldstein.—p. 221.
Chest Conditions Which Come Under Realm of General Surgery. A. C. Hewes.—p. 227.
Radical Breast Surgery and Local Recurrence. W. C. White.—p. 237.
Experiences in Surgical Treatment of Congenital Pulmonary Stenosis. C. B. Olim.—p. 245.
Gastrojejunocolic Fistula. J. C. Patterson, W. G. Elliott and R. B. Martin III.—p. 255.

Lesions of Cervical Stumps.—Collins and his associates analyzed a series of 226 patients who, after supravaginal hysterectomy, had symptoms arising in the cervical stump warranting its surgical excision. They did not include in this analysis patients in whom symptoms were relieved by simple cauterization. Almost one-third of the patients still had the same complaint for which the original pelvic operation had been performed. Removal of the cervix produced relief. Multiplicity of symptoms was the rule. Nearly half of 226 patients had pelvic pain; 105 had leukorrhea; 84 had bloody discharge; 72 had dyspareunia; 56 had backache; 60 had urinary discomfort, and 34 had bearing down pain. In the absence of fixed pelvic masses the ability to reproduce exactly a patient's symptoms by gentle motion of the cervix means that the cervix is the etiological factor. Production of local pain is possible in any woman if the examination is very vigorous. Cervical erosion and chronic cervicitis were present in nearly 90% of the patients. Other lesions were stenosis or stricture, empyema, epidermoid carcinoma, endometriosis, fibroids, polyps, squamous metaplasia, endocervical hyperplasia, ulceration, mucocele, and leukoplakia. There were 10 patients (4.4%) with carcinoma. When hysterectomy is indicated, total abdominal hysterectomy or vaginal hysterectomy are the procedures of choice. Supravaginal hysterectomy is rarely indicated. If it has been performed, the cervix should be inspected at frequent intervals. If the cervix is diseased or symptomatic, cauterization or vaginal excision of the cervix is advisable.

Annals of Surgery, Philadelphia

133:289-432 (March) 1951

*Frequency of Aspiration of Gastric Contents by Lungs During Anesthesia and Surgery. G. A. Culver, H. P. Makel and H. K. Beecher.—p. 289.
Limitations of Lumbar Sympathectomy in Far-Advanced Peripheral Sclerosis. P. A. Kirschner.—p. 293.
Transient Diabetes in Postoperative State. M. D. Pareira and J. G. Probstein.—p. 299.
Uptake of Labelled Phosphorous by Cancer of Cervix: Preliminary Report. S. H. Sturgis, E. DeMuylder and J. V. Meigs.—p. 305.
Pathologic Physiology of Congenital Megacolon. R. B. Hiatt.—p. 313.
Surgical Treatment of Congenital Megacolon. R. B. Hiatt.—p. 321.
Rationale of Radical Mastectomy: Review. D. H. Sprong Jr. and W. F. Pollock.—p. 330.
*Clinical Experiences with Aureomycin in Surgical Infections. A. M. Rutenburg, F. B. Schweinburg and J. Fine.—p. 344.
Aureomycin as Aid in Abdominal Surgery. L. T. Wright and A. Prigot. —p. 364.
Giant Cell Tumors of Tendon Sheath Origin: Consideration of Bone Involvement and Report of Two Cases with Extensive Bone Destruction. A. G. Flechtner Jr. and R. C. Horn Jr.—p. 374.
Surgical Treatment of Varicose Veins: Survey of Methods of Treatment with Description of Intraluminary Stripping and Its Results. P. W. Fenney.—p. 386.
Glomus Tumor: Report of 20 Cases. M. Riveros and G. T. Pack. —p. 394.
Glomus Tumor of Unusual Size: Case Report. D. H. Riddell and R. S. Martin.—p. 401.
Hemorrhage from Spontaneous Rupture of Pheochromocytoma of Right Adrenal Gland: Case Report. G. E. McFarland and W. R. Bliss. —p. 404.
Ovarian Dermoid Perforating Rectum in Child: Excision by Abdominoperineal Proctosigmoidectomy. H. E. Bacon and S. W. Eisenberg. —p. 408.
Spontaneous Hemopneumothorax: Report of Case Treated by Thoracotomy. R. T. Myers, F. R. Johnston and H. H. Bradshaw.—p. 413.
Giant Benign Duodenal Ulcer: Report of Case. G. Evashwick.—p. 417.
Sacrococcygeal Teratoma: Review of Literature; Report of Case in Adult Containing Glomus. L. T. Palumbo, K. R. Cross and R. E. Paul.—p. 421.

Gastric Contents in Lungs During Anesthesia and Surgery.—Aspiration of gastric contents is a serious, often fatal accident during general anesthesia. Vomiting is only part of the problem, for silent aspiration of gastric contents by the deeply anesthetized patient is also common. The authors made studies on 300 surgical patients to determine the causes and frequency of these accidents. Four cubic centimeters of a 25% aqueous solution of Evans blue dye (T-1824) were introduced into the stomach preoperatively. As soon as the operation was over, the mouth, pharynx, larynx, trachea, and main bronchi were inspected by direct vision through laryngoscope and bronchoscope. Regurgitation (as indicated by dyed stomach contents in the pharynx) occurred in 79 of the 300 patients; 24 of these showed frank vomiting. Forty-nine patients aspirated gastric contents into the lungs. Regurgitation occurs much oftener when the patient is in the Trendelenburg or the lateral position than when he is in the horizontal supine position or the lithotomy position. Gastric tubes are protective, presumably by keeping the stomach contents low in volume. When the stomach is not empty, pressure on it by the surgeon during work in the upper abdomen may possibly force gastric contents into the pharynx. The volume of the aspirated material may produce fatal obstruction, but the irritant and infectious action of the aspirated material also may be serious. The stomach should be emptied by induced vomiting when emergency surgery must be undertaken. Even 15 or 20 hours after the onset of an emotional crisis or a painful injury the stomach may still hold whatever contents it had at the beginning of that time.

Aureomycin in Surgical Infections.—Of 263 surgical patients treated with aureomycin some received it exclusively from the beginning, others were given it after they had proved refractory to other antibiotics, and still others received it in combination with other chemotherapeutic agents. Aureomycin effectively suppressed the normal intestinal flora and gave excellent results in 67 cases in which gastrointestinal surgery was done. Alone, or in combination with penicillin, aureomycin was effective in the therapy of diffuse peritonitis due to intestinal bacteria. It produced improvement in all and cure in most patients with urinary infections, due chiefly to gram-negative bacilli, providing appropriate surgical treatment was given when indicated. It seemed to control biliary tract infections, and it served as a valuable adjunct to surgery in infections of the extremities with peripheral vascular disease. Postoperative wound infections and miscellaneous infections, including acute infections of the soft tissues, acute osteomyelitis, acute parotitis, Vincent's angina, acute hepatitis, and herpes zoster, responded to aureomycin. This drug was frequently effective in infections that had failed to respond to other antibiotics, and it was equally effective in mixed and in unimicrobial infections. The drug was administered orally, intramuscularly, or intravenously. Recently the intramuscular route has been discontinued. The toxicity of parenterally administered aureomycin is almost negligible, but some lots of the drug for oral administration continue to cause nausea, anorexia, or diarrhea. In some patients, severe proctitis or colitis developed during oral aureomycin therapy. The accompanying diarrhea was so severe that the patients' fluid and electrolyte balance became seriously impaired. In several instances the bowel was edematous, hyperirritable, and in almost continuous spasm. Stomatitis and esophagitis with dysphagia, substernal pain, and "burning" lasted several weeks in some cases.

Blood, New York

6:291-388 (April) 1951

Hemolytic Disease in Newborn Dogs. L. E. Young, R. M. Christian, D. M. Ervin and others.—p. 291.
Experimental Studies on Reticulosarcoma. A. Sakamoto.—p. 314.
Serum Anti-Proteases in Leukemias. P. M. West and B. W. Smith. —p. 330.
Comparison of Effects of 4-Amino-N[10]-Methyl-Pteroylglutaminic Acid and 2,6-Diaminopurine upon Sensitive and Resistant Sublines of Strain of Mouse Leukemia. J. H. Burchenal, L. F. Webber, G. M. Meigs and J. L. Biedler.—p. 337.
Microspectrophotometric Determination of Desoxyribosenucleic Acid in Megaloblasts of Pernicious Anemia. E. H. Reisner Jr. and R. Korson. —p. 344.
Effects Produced by Trypsin on Certain Properties of Human Red Cell. E. Ponder.—p. 350.

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43:129-198 (March) 1951. **Partial Index**

*Artificial Pneumothorax Evaluation Based on Complications. J. L. Porrata-Armstrong.—p. 151.

Artificial Pneumothorax.—According to Porrata-Armstrong the use of therapeutic pneumothorax has become limited in the past few years. It is still, however, the treatment of choice in unilateral pulmonary tuberculosis with or without a small cavity of recent appearance that has not responded adequately to bed-rest, either alone or combined with specific therapy. The amount of exudation and caseation in the surrounding tissues and the bronchial lesions, as shown by bronchoscopy, should be minimal. Careful management of artificial pneumothorax includes the following measures: 1. Proper spacing of refills, so that optional collapse is maintained without too much fluctuation. Too much collapse is dangerous; too little is ineffective. 2. Fluoroscopy prior to each refill. 3. Determination by manometric reading that the pneumothorax needle is in the pleural space. 4. Avoidance of positive pressures. 5. Avoidance of puncturing the underlying lung. 6. Adequate bacteriological studies, including cultures of gastric washings and of sputum. 7. Proper coordination with antituberculous therapy. 8. Abandonment of the pneumothorax at the proper time, namely, when there is persistence of a cavity after an adequate trial (two to three months), increase in size of cavity during collapse, development of large and intractable pleural effusion, and rapid obliteration of the pleural space by adhesive pleuritis.

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Some Recent Advances in Study of Uric Acid Metabolism and Gout. A. B. Gutman.—p. 144.
Tumors of Bones and Joints. H. L. Jaffe and G. Selin.—p. 165.
Modern Treatment of Syphilis. E. W. Thomas.—p. 175.

27:199-258 (April) 1951

Present Status of Antibiotics in Bacterial Infections. M. Finland.—p. 199.
Present Status of Antibiotic Therapy in Viral and Rickettsial Disease. J. E. Smadel.—p. 221.
Advances in Treatment of Chronic Alcoholism. O. Diethelm.—p. 232.
Non-Articular Rheumatism. R. H. Freyberg.—p. 245.

Circulation, New York

3:481-640 (April) 1951

*Polyarteritis Nodosa: Correlation of Clinical and Postmortem Findings in 17 Cases. G. C. Griffith and I. L. Vural.—p. 481.
*Acute and Subacute Disseminated Lupus Erythematosus: Correlation of Clinical and Postmortem Findings in 18 Cases. G. C. Griffith and I. L. Vural.—p. 492.
Hepatic Abnormalities in Congestive Heart Failure: Needle Biopsy Studies. T. J. White, R. B. Wallace, A. M. Gnassi and others.—p. 501.
Large Thymic Tumor Simulating Pericardial Effusion. A. Bernstein, E. Kiosk, F. Simon and H. A. Brodkin.—p. 508.
Anatomic Variations of Orifice of Human Coronary Sinus. H. K. Hellerstein and J. L. Orbison.—p. 514.
Pathology of Pulmonary Vascular Tree: III. Structure of Intrapulmonary Arteries in Cor Triloculare Biatriatum with Subaortic Stenosis. J. E. Edwards and W. B. Chamberlin Jr.—p. 524.
Physiologic Studies in Mitral Valvular Disease. A. Draper, R. Heimbecker, R. Daley and others.—p. 531.
Circulatory and Respiratory Effects of Adenosine Triphosphate in Man. D. F. Davies, A. L. Gropper and H. A. Schroeder.—p. 543.
Production of Prolonged Arterial Hypertension in Dogs by Chronic Stimulation of Nervous System: Exploration of Mechanism of Hypertension Accompanying Increased Intracranial Pressure. R. D. Taylor and I. H. Page.—p. 551.
Cerebral Circulation and Metabolism in Uremia. A. Heyman, J. L. Patterson Jr. and R. W. Jones Jr.—p. 558.
Electrocardiogram in Congenital Heart Disease: Preliminary Report. O. Paul, G. S. Myers and J. A. Campbell.—p. 564.
Vibrations of Low Frequency over Precordium. F. D. Johnston and D. C. Overy.—p. 579.
Observations on Electrocardiogram and Ventricular Gradient in Complete Left Bundle Branch Block. J. F. Pantridge.—p. 589.
Spatial Vectorcardiogram in Right Bundle Branch Block. J. A. Abildskov, C. E. Jackson, G. E. Burch and J. A. Cronvich.—p. 600.
Angiography. C. T. Dotter, I. Steinberg and R. P. Ball.—p. 606.

Polyarteritis Nodosa.—The clinical and pathological findings were studied in 14 men and three women between the ages of 30 and 72 with polyarteritis nodosa. It was observed that this disease occurs most commonly among men between 40 and 50. Caucasians predominated over Negroes. The authors found no close etiological relationship between allergy and polyarteritis nodosa. Eosinophilia, which was considered by some to be one of the most significant laboratory findings, occurred in only one of the 17 patients, and this patient had had bronchial asthma for many years. The authors believe that polyarteritis nodosa and hypersensitivity angiitis are two different conditions and that it is the latter that is characterized by allergic manifestations, including eosinophilia. Pain was the commonest symptom and was observed in 11 patients. Shortness of breath, due to either heart failure or nonspecific pulmonary complications, was observed as a late symptom in eight patients. Tachycardia, fever, and edema were the outstanding signs. In all 17 cases there was no consistent correlation between the clinical findings referable to the cardiovascular system and specific types of pathological changes in the organs of this system. Hypertension is one of the commonest signs of polyarteritis nodosa and was observed in 13 of the authors' patients. It may develop very late, however, and failure to diagnose polyarteritis nodosa because of the absence of hypertension will lead to error, as may the absence of eosinophilia and subcutaneous nodules. The changes in the electrocardiogram were not specific and were due to myocardial ischemia and scarring. There also was no consistent correlation between the clinical evidence of renal damage and specific types of pathological changes in the kidneys. The frequent association of glomerulonephritis and polyarteritis nodosa reported in the literature previously was confirmed. In all 13 patients with hypertension pathological renal lesions were demonstrated. Involvement of the gastrointestinal system was common, and occurred in 10 of the 17 patients, with abdominal pain, nausea, and vomiting as the most frequent symptoms. The lesions were distributed throughout the viscera. The most commonly involved organ in the abdomen was the liver. Splenomegaly was observed in only three patients. The central nervous system was examined microscopically in nine cases. Four of these showed characteristic changes in the cerebral vessels. According to this study, pulmonary involvement in polyarteritis nodosa is rare, as it was observed in only one case.

Disseminated Lupus Erythematosus.—Eighteen cases of acute and subacute disseminated lupus erythematosus were verified by postmortem study in a series of 19,242 autopsies. The disease was observed to be commoner among women between the ages of 22 and 33. Pain in the joints was the commonest symptom and was observed in 13 of the 18 cases. The typical butterfly rash occurred in 11 cases. Nonspecific skin lesions were observed in four other cases. Shortness of breath was the commonest complaint and occurred in 16 cases. In 14 of these there was an alteration of the connective tissue and muscle fibers in the myocardium, but there was no constant correlation between clinical findings and specific pathological lesions. Neither murmurs heard over the precordium nor QRS and T wave changes seen in the electrocardiogram were pathognomonic for the disease. Of seven patients with apical systolic murmurs only two had nonbacterial verrucous endocarditis of the mitral valve leaflets; conversely, of six patients with nonbacterial verrucous endocarditis only two had an apical systolic murmur. Albuminuria was the commonest laboratory observation, being observed in 14 of 17 patients in whom urinalysis was performed. The often observed wire-loop changes of the glomeruli may cause albuminuria, leukocyturia, cylinduria, high nonprotein nitrogen of the blood, and hypertension collectively, or one of these signs separately, or there may be no clinical findings. In the absence of the typical butterfly rash in seven cases, the observations most constant and suggestive of the disease were (1) polyarthralgia of undetermined origin, (2) fever and tachycardia of unknown cause, (3) albuminuria alone or together with hematuria, and cylindruria, (4) leukopenia, and (5) signs and symptoms of serosal inflammation. The clinical diagnosis is confirmed by biopsy of the skin lesion, the observation of anemia and leukopenia, a high globulin content in the serum (above 2.5 gm. per 100 cc.), and the detection of typical L. E. cells in the peripheral blood or in the bone marrow.

Electroencephalography and Clin. Neurophys., Boston

3:1-130 (Feb.) 1951

Stimulation Studies of Prefrontal Lobe and Uncus in Man. W. T. Liberson, W. B. Scoville and R. H. Dunsmore.—p. 1.
Electroencephalographic Findings in 186 Cases of Chronic Post-Traumatic Encephalopathy. E. C. Clark and E. O. Harper.—p. 9.
Incidence of Focal and Non-Focal EEG Abnormalities in Clinical Epilepsy. J. Kershman, J. Vasquez and S. Goldstein.—p. 15.
Servo-Motor Integration of Electrical Activity of Brain and Its Applications to Automatic Control of Narcosis. M. Verzeano.—p. 25.
Drug Effects on Results of Minimal Cortical Stimulation. J. A. Whieldon and A. van Harreveld.—p. 31.
Physiological Relationships Between Hypothalamus and Cerebral Cortex. W. R. Ingram, J. R. Knott, M. D. Wheatley and T. D. Summers.—p. 37.
Electroencephalographic Findings in 39 Surgically Proven Subdural Hematoma. W. J. Friedlander.—p. 59.
Effect of Benzedrine on Post-Electroshock EEG. M. A. Lennox, T. C. Ruch and B. Guterman.—p. 63.
Comparative Effectiveness of Sleep and Metrazol-Activated Electroencephalography. J. K. Merlis, C. Grossman and G. F. Henriksen.—p. 71.

Illinois Medical Journal, Chicago

99:165-228 (April) 1951

Diagnosis and Treatment of Unusual Conditions in Infants and Children. J. L. Reichert.—p. 197.
Diabetes Mellitus in Infants and Children. A. L. Newcomb.—p. 204.
Urological Problems in Infants and Children. K. E. Barber.—p. 207.
New (Sublingual) Method for Controlling Pain of Migraine and Other Headaches (Preliminary Report). L. Unger and A. H. Unger.—p. 210.
Electrocardiographic Abnormalities in the Mentally Ill: Is "Myocardial Damage" Sometimes of Psychogenic Origin? S. G. Plice and C. W. Pfister.—p. 212.
Sarcoidosis. R. Bloch.—p. 218.
Carcinoma of Breast Masked by Non-Puerperal Abscess. E. F. Dolehide and J. W. Tope.—p. 220.

Iowa State Medical Society Journal, Des Moines

41:109-168 (April) 1951

Medical Care of Children with Paroxysmal Convulsive Disorders. J. C. MacQueen.—p. 111.
Discussion of Neurological Basis for Seizures. W. R. Ingram.—p. 114.
Electroencephalography in Evaluation of Epilepsy: Some Applications and Limiting Conditions. J. R. Knott.—p. 120.
Brief Survey of Pharmacology of Antiepileptic Drugs. F. W. Schueler and R. M. Featherston.—p. 125.
Neurosurgical Measures in Management of "Epilepsy." R. Meyers.—p. 128.
Surgical Lesions of Chest in Children. J. L. Ehrenhaft.—p. 136.

Journal of Clinical Investigation, Cincinnati

30:237-344 (March) 1951

Effects of Adrenocorticotropic Hormone and Cortisone in Adrenogenital Syndrome Associated with Congenital Adrenal Hyperplasia: Attempt to Explain and Correct Its Disordered Hormonal Pattern. F. C. Bartter, F. Albright, A. P. Forbes and others.—p. 237.

Labile Factor of Prothrombin Conversion: Its Consumption Under Normal and Pathological Conditions Affecting Blood Coagulation. B. Alexander, R. Goldstein and G. Landwehr.—p. 252.

Absorption Studies Using Portal Anastomotic Veins. W. B. Bean, M. Franklin, J. F. Embick and K. Daum.—p. 263.

*Effect of Cortisone on Acute Streptococcal Infections and Post-Streptococcal Complications. E. O. Hahn, H. B. Houser, C. H. Rammelkamp Jr. and others.—p. 274.

Mechanism of Polyuria of Diabetes Insipidus in Man: Effect of Osmotic Loading. W. A. Brodsky and S. Rapoport.—p. 282.

Factors Maintaining Cerebral Circulation During Gravitational Stress. J. P. Henry, O. H. Gauer, S. S. Kety and K. Kramer.—p. 292.

Correlation of 24-Hour Radioiodine Uptake of Human Thyroid Gland with Six- and Eight-Hour Uptakes and "Accumulation Gradient." M. A. Greer.—p. 301.

Effect of Upright Posture upon Hepatic Blood Flow in Normotensive and Hypertensive Subjects. J. W. Culbertson, R. W. Wilkins, F. J. Ingelfinger and S. E. Bradley.—p. 305.

Effect of Splanchnic Sympathectomy in Hypertensive Patients upon Estimated Hepatic Blood Flow in Upright as Contrasted with Horizontal Position. R. W. Wilkins, J. W. Culbertson and F. J. Ingelfinger. —p. 312.

Adrenocortical Control of Sodium and Potassium Excretion in the Newborn Period. R. Klein.—p. 318.

Studies on Combined Use of Measurements of Sweat Electrolyte Composition and Rate of Sweating as Index of Adrenal Cortical Activity. W. Locke, N. B. Talbot, H. S. Jones and J. Worcester.—p. 325.

Effect of Lipiodol on Alveolar Gas Exchange. H. Black and A. Roos. —p. 338.

Cortisone and Acute Streptococcic Infections.—The authors studied 174 patients with acute streptococcic tonsillitis and pharyngitis to determine the effect of cortisone on the disease and on the subsequent incidence of rheumatic fever. The patients were divided into treated and control groups. Two treatment schedules were employed. Seventeen patients received a total of 500 mg. of cortisone acetate intramuscularly in 50 mg. doses. Seventy patients were given a total of 600 mg. in 100 mg. doses. Control patients received 0.85% sodium chloride injections. No antipyretics or other medications were given, except codeine for relief of severe headache. Patients were examined daily through the sixth day of illness by one member of the staff who had no knowledge of the treatment being administered. Cortisone therapy had no effect on symptoms or physical signs of this infection. Patients who received cortisone had fever for a longer period than the control patients. Suppurative complications developed in one of the treated patients and in three of the control subjects. Rheumatic fever was diagnosed in two treated and five control subjects. The increase in the antistreptolysin titer was somewhat less in the serums of the treated group than in the control patients one week after the onset of infection, but at two, three, and four weeks the formation of antibody was slightly greater in treated than in control patients.

Journal of Investigative Dermatology, Baltimore

16:119-200 (March) 1951

Lack of Fluorescence of Scalp Hairs Infected with Microsporum Gypseum (Fulvum). J. W. Wilson and O. A. Plunkett.—p. 119.

Treatment of Parapsoriasis with Vitamin D^2. O. Canizares, J. H. Dwinelle and H. Shatin.—p. 121.

Experimental Treatment of Verruca Vulgaris with Locally Injected Colchicine. L. M. Nelson.—p. 123.

Electrophoretic Studies in Bullous Diseases: Electrophoretic Pattern of Animals Injected with Serum or Blister Fluid from Patients with Bullous Disease. M. H. Berg and A. C. Curtis.—p. 125.

Universal Serologic Reaction in Rabbit Syphilis. A. C. Curtis, R. J. Rowe, B. J. Baribeau and R. L. Kahn.—p. 131.

Evaluation of Current Methods for Local Treatment of Tinea Capitis. A. M. Kligman and W. W. Anderson.—p. 155.

Assay of Hyaluronidase in Various Dermatoses. P. H. Prose and R. L. Baer.—p. 169.

Evidence of Adreno-Cortical Stimulation by Autohemotherapy. G. C. Sauer.—p. 177.

Effects of Penicillin on Certain Hitherto Incurable Dermatoses. V. H. Witten.—p. 193.

J. National Malaria Society, Columbia, S. C.

10:1-96 (March) 1951

Malaria and Society. P. F. Russell.—p. 1.

Preliminary Experiments in Use of Hot DDT and Other Halogenated Hydrocarbons for Residual Applications. R. L. Crowell and R. W. Fay. —p. 8.

Growth Changes of Anopheline Eggs in Water and in Saline Solutions. W. G. Downs.—p. 17.

Characteristics of Larvicidal Sprays Applied by Aircraft for Control of Anopheles Quadrimaculatus on Impounded Water. C. W. Krusé, E. A. Philen and G. F. Ludvik.—p. 23.

Susceptibility of Anopheles Quadrimaculatus to DDT After Five Years of Routine Treatment in the Tennessee River Valley. G. F. Ludvik, W. E. Snow and W. B. Hawkins.—p. 35.

Malaria Reconnaissance in the Dominican Republic. T. T. Mackie, T. W. Simpson and R. L. Tuttle.—p. 44.

Observations on Natural Occurrence of Plasmodium Floridense, Saurian Malaria Parasite, in Sceloporus Undulatus Undulatus. M. H. Goodwin Jr.—p. 57.

Strain Differences in Plasmodium Gallinaceum Brumpt: II. Experiences with Sporozoite and Single Oocyst Passage of BI Strain. H. L. Trembley, J. Greenberg and G. R. Coatney.—p. 68.

Id.: III. Spontaneous Conversion of Phanerozoite-Producing SP Strain to Phanerozoiteless M Strain Through Mosquito Passage. H. L. Trembley, J. Greenberg and G. R. Coatney.—p. 76.

Id.: IV. Experiences with Blood Passage of Phanerozoiteless M Strain. J. Greenberg, H. L. Trembley and G. R. Coatney.—p. 82.

J. Neuropath. and Clinical Neurology, Chicago

1:111-182 (April) 1951

Cauda Equina Nerve Root Regeneration Through Nerve Grafts: Experimental Study in Monkeys. I. M. Tarlov, D. Berman, E. Kellerman and J. Moldaver.—p. 111.

*Encephalopathy Following Barbiturate Intoxication: Report of Case. M. A. Neumann.—p. 145.

"Circumscribed" Glioblastoma Multiforme. L. M. Davidoff and E. H. Feiring.—p. 161.

Lipoma of Corpus Callosum. M. E. Kinal, G. Rasmussen and W. B. Hamby.—p. 168.

Combined Silver and Sudan Strain for Demonstration of Senile Plaques and Lipoids in Frozen Sections. G. Strassmann.—p. 179.

Encephalopathy Following Barbiturate Intoxication.—Barbiturate poisoning is generally followed by either complete recovery without neurologic sequelae or death within the first 48 hours. The case reported here is of special interest because the patient lived in a state of semistupor for nearly five months after the ingestion of about 70 grains (4.7 gm.) of phenobarbital and 24 sedormid® (allyl-isopropyl-acetyl-carbamide) sedative tablets without fully recovering social awareness. Massive cerebral infarction and acute bronchopneumonia were regarded as the cause of death. Destructive parenchymatous lesions and progressive proliferative changes in the glia were found. The predominant changes were in the form of laminar cortical degeneration associated with less prominent basal ganglion damage. These changes are not specific, as similar lesions have occurred as the result of poisoning with carbon monoxide and other noxious agents. It is suggested that a direct chemical action of the poison on the nerve cells may be as important a factor as is anoxia in the production of the cerebral changes.

Journal of Nutrition, Philadelphia

43:345-458 (March) 1951

Influence of Animal Protein Factor Supplements and Antibiotics on Incidence and Severity of White Feathers in Turkeys. S. J. Slinger, K. M. Gartley, W. F. Pepper and D. C. Hill.—p. 345.

Studies on Chronic Oral Toxicity of Cottonseed Meal and Cottonseed Pigment Glands. A. M. Ambrose and D. J. Robbins.—p. 357.

Augmentation of Provitamin A Potency of Carotene When Fed in Margarine. H. J. Deuel Jr., S. M. Greenberg, E. E. Savage and D. Melnick. —p. 371.

Demonstration of Copper Deficiency in Young Growing Pigs. H. S. Teague and L. E. Carpenter.—p. 389.

Digestion and Absorption of P^{32} Labeled Casein by Young Calf. G. P. Lofgreen, M. Kleiber and A. H. Smith.—p. 401.

Thiamine Deficiency in Lamb. H. H. Draper and B. C. Johnson.—p. 413.

Supplemental Value of Certain Amino Acids for Lamb Protein and Nutritive Value of Protein in Different Cuts of Lamb. R. Hoagland, N. R. Ellis, O. G. Hankins and others.—p. 423.

Effect of Heat Treatment on Nutritional Value of Some Vegetable Oils. E. W. Crampton, F. A. Farmer and F. M. Berryhill.—p. 431.

Nutrition of Mouse: X. Studies on Utilization of High and Moderately Low Protein Diets for Growth in Four Strains of Mice. P. F. Fenton and C. J. Carr.—p. 441.

Vitamin A and Carotene Absorption in Guinea Pig. L. Woytkiw and N. C. Esselbaugh.—p. 451.

Journal of Pediatrics, St. Louis

38:275-410 (March) 1951

Pediatrician Looks at Psychiatry. L. Porter.—p. 275.
*Treatment of Epilepsy by Cortical Excision. A. E. Walker.—p. 285.
Determination of Sodium 24 "Space" in Infants, Children and Adults. A. Perley, G. B. Forbes and M. M. Pennoyer.—p. 299.
*Illness in First Trimester of Pregnancy: Its Lack of Significance in Relation to Congenital Anomaly of Offspring and to Full-Term Pregnancy, Prematurity, and Stillbirth. E. E. Hartman and R. L. J. Kennedy —p. 306.
Erythema Multiforme Exudativum. L. Wright and S. Jenkins.—p. 310.
Erythema Multiforme as Manifestation of Neonatal Septicemia. H. J. Starr and P. B. Holliday Jr.—p. 315.
Ileocecal Intussusception Caused by Lymphoid Hyperplasia. W. D. O'Sullivan and C. G. Child III.—p. 320.
Precocious Sexual Development: Study of 30 Cases. G. H. Lowrey and T. G. Brown.—p. 325.
Clinical Study in Man of Effects of Variation of Agenized Flour Products in Diet. M. W. Laufer, E. Denhoff and F. Giunta.—p. 341.
Acute Glomerulonephritis: Impetigo as Etiological Factor. G. C. McCullough, J. Y. Coffee, P. A. Trice Jr. and others.—p. 346.
Survey of the Rh Problem in Mixed Racial Group. H. H. Pomerance and L. J. Salerno.—p. 349.
Aortic Atresia with Hypoplasia of Left Heart and Aortic Arch. S. Friedman, L. Murphy and R. Ash.—p. 354.

Treatment of Epilepsy by Cortical Excision.—Primary therapy for a patient suffering from convulsive seizures consists of anticonvulsive medication, psychotherapy, and social and occupational rehabilitation. Operative intervention should be considered when medical management has failed to control the seizures. If there is evidence of a progressive lesion of the brain, such as tumor, abscess, or hematoma, appropriate surgical measures are imperative. Thus only 20 to 25% of patients with focal epilepsy become candidates for surgical intervention. The focal nature of an epilepsy may be suggested by the clinical history, the electroencephalogram, pneumoencephalogram, and angiogram but must be established by critical examination of the entire clinical picture together with the results of the various diagnostic tests. If a discrepancy between these various examinations becomes apparent, it should be considered that two foci exist or that the condition is idiopathic rather than focal epilepsy. Three cases of focal epilepsy, in boys 15, 12, and 11, respectively, are reported on, illustrating the various types of cortical resections for this condition. Subpial resection was adequate and should produce minimal scarring in the first case. The epileptogenic zone involved a large area at the occipital pole in the second case, requiring partial occipital lobectomy. In the third patient, with infantile hemiplegia, hemispherectomy was necessary to eliminate the abnormal, scarred tissue. The end results of surgical treatment cannot be assessed accurately until the patients have been followed for at least five years, but the physical and mental improvement that followed the surgical resection of epileptogenic foci in isolated cases offers much promise to a group of patients with focal epilepsy otherwise considered incurable.

Illness in First Trimester of Pregnancy.—Of 1,228 mothers who gave birth to 1,237 infants in 1948 at St. Mary's Hospital in Rochester, Minn., 148 mothers were ill at some time in the first trimester of pregnancy. These ill mothers subsequently gave birth to 149 children, eight of whom (5.4%) had congenital anomalies. The 1,080 mothers who were not ill in the first trimester of pregnancy gave birth to 1,088 infants of whom 57 (5.2%) had congenital anomalies. Thus, there was no significant difference between the incidence of congenital anomalies following maternal illness in the first trimester of pregnancy and that following uneventful pregnancy. Furthermore, illness in the mother in the first trimester of pregnancy apparently was not significant in the incidence of full-term pregnancy, prematurity, or stillbirth.

J. Venereal Disease Information, Washington, D. C.

32:57-82 (March) 1951

Effect of Syphilis on Nonwhite Longevity as Reflected in Mortality Data, Georgia, 1939-41. H. W. Martin.—p. 57.
Venereal Disease Case Finding in High-Prevalence Areas: I. Procedures Used. G. Gumpert, N. R. Ingraham Jr. and M. J. Burke.—p. 60.
*Dental Hypoplasias in Relation to Congenital Syphilis. S. B. Beecher, H. N. McIntosh and E. J. McCart.—p. 70.

Dental Hypoplasias in Congenital Syphilis.—The authors made a survey in 18 public schools for Negroes in Missouri to determine the incidence of congenital syphilis in children with dental hypoplasias suggestive of syphilis. The syphilitic hypoplasias that affect the permanent incisors and six year molars are known as Hutchinson's incisors, mulberry molars, and the bud molar of Pfluger. The public health dentist examined 1,639 children. Each child who was a suspect and the child's mother were called so that the family's medical history and serologic tests for syphilis could be taken. The family of each seropositive child was examined by the medical officer. Of 54 suspects reported by the dentist, 50 were serologically tested for syphilis and 16 were found to be infected with congenital syphilis. The results of this project indicate that the cooperation of dentists would be of practical value in case finding. The venereal disease investigator could expect to find 25% of the suspected patients infected with congenital syphilis.

Kansas Medical Society Journal, Topeka

52:93-156 (March) 1951

Trochanteric Fractures of Femur: Experiences at the University of Kansas Medical Center with Group of 45 Cases Treated by Non-Operative Methods During Past Five Years. E. T. Haslam and W. D. Francisco. —p. 93.
Effects of ACTH on Liver Function. R. E. Bolinger and M. H. Delp. —p. 99.
Reversible Cerebral Atrophy. W. P. Williamson and C. J. Winter. —p. 107.
Prolapsing Redundant Gastric Mucosa. G. M. Tice and T. G. Orr. —p. 110.
Re-Evaluation of Surgical Treatment for Duodenal Ulcer as Based on Experimental and Clinical Observations. S. R. Friesen.—p. 114.
Inhibition by Antihistaminic Compounds of Growth of Pathogenic Fungi: Effect of Chlor-Trimeton Maleate in Vitro. J. S. Carter and R. L. Sutton Jr.—p. 119.
Treatment of Congestive Failure. E. G. Dimond.—p. 120.

Nebraska State Medical Journal, Lincoln

36:81-112 (March) 1951

Management of Causalgia. L. G. Herrmann.—p. 82.
Endometriosis. C. P. Huber.—p. 87.
The Goiter Problem Today. H. H. Davis.—p. 91.
Proctoscopy for the Physician. J. B. Christensen.—p. 95.
Management of Blood Bank. F. Cole.—p. 97.
Infectious Diarrheas: Some Bacteriological and Epidemiological Aspects. H. W. McFadden Jr. and M. F. Gunderson.—p. 100.

New England Journal of Medicine, Boston

244:385-422 (March 15) 1951

Effect on Endogenous Thyroid Activity of Feeding Desiccated Thyroid to Normal Human Subjects. M. A. Greer.—p. 385.
Newer Antibiotics in Treatment of Anthrax. H. Gold and W. P. Boger. —p. 391.
Thyroid Crisis Associated with Diabetic Coma. P. Troen, R. C. Taymor and B. I. Goldberg.—p. 394.
Pharyngeal and Laryngeal Symptoms of Thyroid Origin. R. T. Barton. —p. 398.
Medicine as Science: Neurology. H. R. Viets.—p. 400.

244:423-458 (March 22) 1951

Physiologic Principles in Management of Dermatitis. D. M. Pillsbury. —p. 423.
Pulmonary Adenomatosis: Report of Two Cases. E. W. Peterson and J. D. Houghton.—p. 429.
Calcareous Tendinitis of Flexor Carpi Ulnaris. A. P. Aitken and H. K. Magill.—p. 434.
Deep Subcutaneous Administration of Concentrated Heparin: Observations on 15 Patients. D. V. Baker Jr., R. Warren and J. S. Belko. —p. 436.
Medicine as Social Instrument: Nursing. E. K. Russell.—p. 439.

244:459-494 (March 29) 1951

Mercuric Bichloride Poisoning. P. Troen, S. A. Kaufman and K. H. Katz. —p. 459.
Role of Adrenal Steroids in Infection and Immunity. E. H. Kass and M. Finland.—p. 464.
*Extract of Licorice for Treatment of Addison's Disease. J. Groen, H. Pelser, A. F. Willebrands and C. E. Kamminga.—p. 471.
*Eventration of Diaphragm Repaired With Tantalum Mesh. D. T. Monahan.—p. 475.
Medicine as Science: Pathology. O. T. Bailey.—p. 478.

Licorice in Addison's Disease.—Borst recently demonstrated that glycyrrhiza (licorice) extract causes sodium retention and potassium loss leading to an increase in extracellular fluid, plasma volume, venous pressure, and pulse pressure. He concluded that glycyrrhiza contains a substance with desoxycorticosterone-like action. Groen and co-workers then administered 15 gm. of glycyrrhiza extract per day to a patient with Addison's disease previously controlled with desoxycorticosterone

acetate. Mineral equilibrium was maintained as long as the glycyrrhiza therapy was continued. Withdrawal of the extract was followed by reappearance of the clinical, biochemical, and hemodynamic disturbances. A second course, of 30 gm. daily, again produced clinical and laboratory remission. In another patient with Addison's disease a crude extract of one of the main ingredients of the extract, ammonium glycyrrhizinate (3.3 gm. daily orally), maintained sodium, potassium, and chloride equilibrium. Glycyrrhizonic acid is a component of glucuronic acid and glycyrrhetinic acid. The latter is a polyterpene with a structural formula exhibiting a striking resemblance to the cyclopentenophenanthrene steroids, to which group desoxycorticosterone belongs.

Tantalum Mesh in Eventration of Diaphragm.—Monahan reports a case of eventration of the right leaf of the diaphragm associated with massive hemorrhage from a duodenal ulcer. The patient was explored thoracically, and the diaphragm was pleated and reinforced with tantalum mesh. Subsequent bleeding necessitated an emergency gastric resection. Roentgenograms taken 15 months after operation showed the repair to be intact and the diaphragm remaining in its new position. It may be concluded that tantalum mesh can be placed next to the lung without harmful effects and with no more effusion than one would expect to occur after an exploratory thoracotomy.

New York State Journal of Medicine, New York

51:689-816 (March 15) 1951

Role of Physician's Personality in Medical Practice (Psychotherapeutic Medicine). B. V. Strauss.—p. 753.
Classification of Forceps Injuries. E. M. Greenberg.—p. 757.
Cation Exchanger in Hypertension. D. N. Groff.—p. 758.
Friedländer's Bacillus Meningitis in Case with Liver Abscess and Recurrent Bacteremia and Analysis of Cases Receiving Specific Therapy. S. E. Di Figlia and C. Cramer.—p. 761.
Simplified Technic and Guide for Internal Fixation of Fractures About Neck of Femur. T. J. O'Kane and J. J. Leichtling.—p. 766.
Sickle Cell Anemia in Pregnancy. M. Seife and C. Reich.—p. 769.

Pediatrics, Springfield, Ill.

7:305-456 (March) 1951

Effects of Large Loads of Electrolytes. J. L. Gamble, W. M. Wallace, L. Eliel and others.—p. 305.
Total Body Water in Children. B. J. Friis-Hansen, M. Holiday, T. Stapleton and W. M. Wallace.—p. 321.
Effect of Dehydration Produced by Water Deprivation, Diarrhea and Vomiting on Renal Function in Infants. P. L. Calcagno and M. I. Rubin.—p. 328.
Observations on 26 Infants Under One Year of Age Operated on for Tetralogy of Fallot or Tricuspid Atresia. C. R. Leininger and S. Gibson.—p. 341.
Acute Purulent Arthritis (B. Pyocyaneus) in Premature Infant: Recovery with Streptomycin. J. M. Coleman and F. C. Lowry.—p. 347.
Terramycin Hydrochloride in Treatment of Salmonella Choleraesuis Bacteremia. R. B. Scott and C. H. Wooding Jr.—p. 349.
Diplococcus Crassus Septicemia in Premature Infant. H. M. Cardullo, I. Schulman and F. C. Smith.—p. 355.
Spirometric Measurements of Lung Function in Healthy Children. J. A. Turner and R. L. McLean.—p. 360.
*Vitamin A Poisoning. D. Gribetz, S. H. Silverman and A. E. Sobel.—p. 372.
Vitamin E Blood Levels in Premature and Full Term Infants. S. W. Wright, L. J. Filer Jr. and K. E. Mason.—p. 386.
Pulmonocardiac Failure: Report of Case. W. F. O'Connell and Y. C. Lee.—p. 394.
T Wave Contour in Precordial Leads During Childhood. R. W. Reynolds.—p. 400.
Circulating Eosinophils in Children in Health and Disease. K. Hain.—p. 408.
*Gastrointestinal Lesions in Acute Bulbar Poliomyelitis: Report of Five Cases with Recovery in One. C. D. Cook, J. R. Hartmann, S. J. Sarnoff and W. Berenberg.—p. 415.
Electroencephalogram and Eye Disorders: Clinical Correlation. J. D. Levinson, E. L. Gibbs, M. L. Stillerman and M. A. Perlstein.—p. 422.

Vitamin A Poisoning.—The occurrence of hypervitaminosis A is reported in two children, a boy 2½ years and a girl 17 months. A survey of the literature revealed records of only 14 cases, all in infants and children, with symptoms of overdosage with vitamin A. The authors' first patient was admitted to the hospital because of irritability, failure to walk, and roentgenologic evidence of cortical thickening of bone suggesting scurvy or leukemia. He also had lesions around the mouth resembling those of vitamin B complex deficiency. A survey of the child's vitamin status in general was undertaken and an elevated fasting vitamin A level of 837 γ per 100 cc. was found. History revealed excessive vitamin A intake. The fasting vitamin A level two days later was 695 γ per 100 cc., of which 67.3% was in the alcoholic form. This elevated level of alcoholic vitamin A, probably denoting large stores of vitamin A in the liver, appears to be a better index of hypervitaminosis A than the total vitamin A level. In addition, evidence has been presented that the toxic factor in hypervitaminosis A is the persistently elevated plasma vitamin A level. The authors' second patient had a history of excess vitamin A intake and the characteristic clinical and roentgenograpihc findings. The symptoms disappeared after cessation of high vitamin A intake. It is suggested that excess intake of vitamin A causes saturation of the tissues, which leads to pathological changes involving the epiphyseal and appositional bone growth, which consist of increased density of the epiphyseal lines and cortical thickening. Cortical thickening apparently causes the tenderness of the extremities that was seen clinically. It cannot be emphasized too strongly that excess vitamin intake may be as dangerous as a deficient intake.

Gastrointestinal Lesions in Bulbar Poliomyelitis.—Five children between the ages of 3 and 11 with severe bulbar poliomyelitis complicated by gastrointestinal perforation and/or hemorrhage are reported on. Four of the patients died. The gastrointestinal lesions were associated with respiratory center involvement in all the patients. The electrophrenic respirator was instrumental in maintaining the respiration of the surviving patient. Massive blood transfusions given to this patient prevented shock from intestinal hemorrhage. The gastrointestinal complications of bulbar poliomyelitis appear to be more frequent than previously realized. A relationship between midbrain damage and gastrointestinal lesions, as emphasized by Cushing, occurring during the course of acute bulbar poliomyelitis, is postulated. Routine guaiac tests should be performed on the stools of all patients with acute bulbar poliomyelitis, so that the presence of gastrointestinal bleeding may be recognized as early as possible. Therapy for these desperately ill patients should include blood transfusions since, as demonstrated by the authors' surviving patient, this condition can be controlled.

Plastic and Reconstructive Surgery, Baltimore

7:169-262 (March) 1951

Guide and Bibliography for Research into Skin Homograft Problem. B. O. Rogers.—p. 169.
Pharyngeal Flap Operation as Speech Aid. R. E. Moran.—p. 202.
Combined Use of Push-Back and Pharyngeal Flap Procedures in Management of Complicated Cases of Cleft Palate. H. Conway.—p. 214.
Free Pattern Skin Graft in Total Scalp Avulsion. S. K. Wynn.—p. 225.
Scalp Defects and Their Repair. K. M. Marcks, A. E. Trevaskis and T. J. Nauss.—p. 237.
Vitallium Reconstruction of Hemimandible and Temporo-Mandibular Joint. W. P. Kleitsch.—p. 244.

Public Health Reports, Washington, D. C.

66:327-354 (March 16) 1951

Studies to Formulate New Media for Standard Plate Count of Dairy Products. L. Buchbinder, Y. Baris, E. Alff and others.—p. 327.
Incidence and Distribution of Brucella abortus in Slaughtered Bang's Reactor Cattle. N. B. McCullough, C. W. Eisele and A. F. Byrne.—p. 341.
Charcoal Agar Culture Medium for Preparing Hemophilus Pertussis Vaccine. H. M. Powell, C. G. Culbertson and P. W. Ensminger.—p. 346.

66:355-386 (March 23) 1951

Statistical Studies of Heart Disease: IX. Race and Sex Differences in Trend of Mortality from Major Cardiovascular-Renal Diseases. I. M. Moriyama and T. D. Woolsey.—p. 355.
Graduates from Undergraduate Sanitary Engineering Courses in the United States. A. P. Miller.—p. 369.
*Hazards of Shoe-Fitting Fluoroscopes. W. W. Van Allen.—p. 375.

Hazards of Shoe-Fitting Fluoroscopes.—Shoe-fitting fluoroscopes present two distinct radiation problems: (1) the direct radiation received by the customer, and (2) the radiation received by the shoe store personnel. In the first case, radiation exposure is brief but relatively intense. Conversely, clerks and other personnel in the store are subject principally to secondary radiation in varying quantities, depending on their position and

habits during examinations. The author of this report examined several shoe-fitting fluoroscopes and measured their radiation characteristics. Considering the very short target-foot distance in these machines, amounting to approximately 6 in. (15.24 cm.), high dosage rates are to be expected. The secondary radiation, immediately behind the customer, may be as much as 50 to 100 milliroentgens per minute. Since the maximum permissible radiation dosage rate is defined as 300 milliroentgens per week, it is clear that this safety limit could easily be exceeded by a clerk who regularly stands in this region. Measures for reducing the radiation hazards inherent in shoe-fitting fluoroscopes are discussed. It is important that shoe store operators be educated about the x-ray equipment that they use in their business. Unfortunately, there is no way to prevent customers from going from one store to another and receiving one or more exposures in each. The city of New York requires the display of warning cards advising against more than three exposures a day, or 12 per year. It should be noted, however, that this limit of three exposures per day is predicated on a maximum radiation dosage of 2 r, which is much lower than any of the dosages actually encountered in a survey.

Southern Medical Journal, Birmingham, Ala.

44:275-368 (April) 1951

Intubated Ureterotomy. D. M. Davis.—p. 275.
Treatment of Female Urethral Diverticula. R. B. Carson and W. D. Wells.—p. 285.
Fatigue Fractures of Tibia. R. P. Kelly and F. E. Murphy.—p. 290.
Enhancement of Serum Penicillin Levels in Man by Benemid.® M. Meads, V. H. Knight and H. L. Izlar Jr.—p. 297.
The Cardiac Patient as a Surgical Risk. W. K. Purks and N. Chalmers.—p. 303.
Prevention of Postoperative Complications. H. C. Ilgenfritz.—p. 306.
Employability of Men After Acute Myocardial Infarction: Ultimate Prognosis of 344 Men Who Returned to Work. M. M. Weiss and W. R. Gary.—p. 312.
Ocular Complications of Arthritis. D. Vail.—p. 317.
Some Unusual Manifestations of Pancreatitis. W. M. Johnson.—p. 322.
*Postoperative Physiologic and Clinical Study of Gastric Vagotomy in 130 Cases. W. Walters and H. H. Belding III.—p. 326.
Practical Histochemical Methods for Tissue Pathology. J. F. A. McManus.—p. 337.
Detection of Industrial Dermatoses. P. C. Campbell Jr.—p. 340.
Industrial Hygiene in Public Health Program. H. H. Hudson.—p. 342.
The Common Cold: What to Do About It. L. M. Sellers.—p. 345.
Management of Pertussis. R. W. Blumberg.—p. 350.
Thrombocytopenia of the Newborn. R. J. LaDriere.—p. 355.
Diagnosis and Treatment of Meconium Peritonitis. C. R. Doyle.—p. 358.

Postoperative Study of Vagotomy.—From a follow-up study of 130 patients on whom vagotomy was performed for peptic ulcer, Walters and Belding reached the following conclusions: 1. Vagotomy is not indicated in the treatment of gastric ulceration, the procedure of choice being gastric resection. 2. Vagotomy alone is rarely indicated in the treatment of duodenal ulceration, and it adds little to such simultaneously performed procedures as gastric resection and gastroenterostomy in the prevention of recurrent ulceration. In addition it has increased the postoperative morbidity and mortality. 3. Vagotomy is an extremely valuable operation in cases of gastrojejunal ulceration after adequate gastric resection. It is of further value combined with a second resection of the stomach for gastrojejunal ulcer, when inadequate resection has been done. 4. There is probably a place for vagotomy in the treatment of small gastrojejunal ulcers or of hemorrhagic gastrojejunitis after gastroenterostomy. In most cases, however, gastric resection is preferred. The wide variety of opinions in regard to the efficacy of the operation is probably due to the differences in the results obtained from clinical follow-up and from questionnaires, and to the failure of some observers to make objective studies one and one-half to two years postoperatively. The authors also observed that following vagotomy alone disturbances of motility persisted in 26.4% of cases studied one to four years after operation and acidity returned to preoperative levels in 23.7% of cases. The results of the insulin test correlated well with clinical results in 80% of all cases but in only 23.1% of the cases with poor clinical results, which indicates that this test is a poor prognostic index of recurrence of ulcer.

Southwestern Medicine, El Paso, Texas

32:73-108 (March) 1951

Hodgkin's Disease and Lymphoid Tumors. H. F. Hare and C. F. Sornberger.—p. 86.
Recent Advances in Proctology. H. Eidinoff.—p. 91.
Anemia. M. A. Carreras.—p. 92.

32:109-144 (April) 1951

Tinea Capitis in the El Paso Southwest. H. D. Garrett and L. M. Smith.—p. 124.
Metabolic Factor of Posterior Pituitary. T. M. Feinblatt and E. A. Ferguson Jr.—p. 127.
Intra-Arterial Transfusion in Case of Hemorrhagic Emergency. B. L. Burditt.—p. 131.

Surgery, Gynecology and Obstetrics, Chicago

92:257-384 (March) 1951

Epidural Hemorrhage and Skull of Children. J. B. Campbell and J. Cohen.—p. 257.
Acute Perforations of Stomach, Duodenum, and Jejunum: Analysis of 224 Cases with Late Follow-Up Data on 147 Cases of Acute Perforated Peptic Ulcer. F. P. Turner.—p. 281.
*Postoperative Use of Adrenal Cortical Extract. J. W. Kelso and C. Keaty.—p. 296.
Preliminary Investigation on Value of Dihydrogenated Alkaloids of Ergot in Treatment of Experimental Frostbite. L. A. Hurley, J. E. Roberts, A. R. Buchanan and G. Tillquist.—p. 303.
*Technique of Vagotomy and Gastroenterostomy in Treatment of Duodenal Ulcer. G. Crile Jr.—p. 309.
Neurovascular Mechanism of Stomach and Duodenum. H. B. Benjamin.—p. 314.
Total Colpocleisis for Pelvic Eventration. H. D. Adams.—p. 321.
Experimental Production of Interventricular Septal Defects: Certain Physiologic and Pathologic Effects. G. D. J. Griffin and H. E. Essex.—p. 325.
Diagnosis and Treatment of Ectopic Pregnancy: Analysis of 140 Recent Cases. B. Word.—p. 333.
Sacrococcygeal Teratomas in Infants and Children: Report of 40 Cases. R. E. Gross, H. W. Clatworthy Jr. and I. A. Meeker Jr.—p. 341.
Perineotomy. J. W. Huffman.—p. 355.
Comparative Study of Operations for Carcinoma of Rectum and Rectosigmoid. C. W. Mayo, M. J. Lee Jr. and R. M. Davis.—p. 360.
Parenteral Nutrition: XII. Successful Intravenous Administration of Large Quantities of Fat Emulsion to Man. E. M. Neptune Jr., R. P. Geyer, I. M. Saslaw and F. J. Stare.—p. 365.

Postoperative Use of Adrenal Cortical Extract.—During periods of extreme heat, postoperative patients frequently have a severe febrile reaction. The two noxious agents, heat and the trauma of the surgical procedure, undoubtedly act as stimuli on the adrenal cortex, and certain changes in these patients appear to be related to altered adrenal activity. It was thought that the administration of an adrenal cortical preparation containing larger amounts of the 11-oxyadrenal steroids might be of value in ameliorating the condition. Women were selected for the study, since 17-ketosteroid production in them is probably entirely of adrenal origin. Ten of the 20 unselected women, who were undergoing major pelvic surgery for gynecologic disorders, received no adrenal cortical therapy and served as controls. Treatment with adrenal cortical extract was begun 12 hours before the operation, when 20 units were given intramuscularly. An additional 40 units were given immediately before and 20 units six to eight hours after the operation. During the first two postoperative days, 40 units were administered daily in two injections of 20 units each. Thereafter, for two days, the total daily dose was 20 units. The total dose was 200 units. The benefit of these rather small doses was evidenced by the clinical course. In most instances, the patients given the medication were subjected to rather more extensive surgery, and they stood the procedure well. Comparison with untreated patients subjected to at least equal surgical trauma revealed that the postoperative course of the treated patients was more satisfactory than that of the untreated group. The sense of well-being was greatly augmented, and recovery was attained without the occurrence of urinary retention, inanition, and other possible complications.

Technique of Vagotomy and Gastroenterostomy in Duodenal Ulcer.—Crile discusses the disadvantages when either vagotomy or gastroenterostomy are used alone and then stresses the advantages of the combined use of these two methods for duodenal ulcer. Most of the so-called side effects of vagotomy are the result of gastric retention and can be avoided by a combination of vagotomy with a well placed gastroenterostomy. The gastro-

enterostomy should be placed at the most dependent part of the denervated stomach, so as to allow drainage by gravity. It should be posterior and antiperistaltic, parallel to the greater curvature, and as close to it as possible. The vagotomy must be complete enough to protect the vulnerable gastroenterostomy from recurrent ulceration. A technique of vagotomy is described in which the nerves are put on tension and are located by palpation.

92:385-512 (April) 1951

Traumatic Rupture of Spleen: Statistical Data on 18 Cases. P. Larghero Y and F. Giuria.—p. 385.
Internal Balance of Plasma Protein in Surgical Patients. I. M. Ariel. —p. 405.
Effect of Dramamine upon Postoperative Nausea and Vomiting: Controlled Study of 250 Consecutive Surgical Patients. A. Rubin and H. Metz-Rubin.—p. 415.
Reflux Esophagitis, Sliding Hiatal Hernia, and Anatomy of Repair. P. R. Allison.—p. 419.
Radical Groin Dissection for Carcinoma: Simplified Operative Procedure. S. N. Mendelsohn and R. D. Mansfield.—p. 432.
Resection of Rectal Mucosa, Colectomy, and Anal Ileostomy with Normal Continence. J. Devine and R. Webb.—p. 437.
Biological Predeterminism in Human Cancer. I. Macdonald.—p. 443.
Valves of External Iliac, Femoral, and Upper Third of Popliteal Veins. T. Powell and R. B. Lynn.—p. 453.
*Transposition of Colon Segment as Gastric Reservoir After Total Gastrectomy. C. M. Lee Jr.—p. 456.
Value of Free Grafts of Peritoneum or Pleura in Sealing Large Defects in Alimentary Tract of Dog. R. M. Moore and A. O. Singleton Jr. —p. 466.
Frontal Leucotomy Versus Cordotomy for Relief of Pain. J. C. White. —p. 469.
*Long Term Appraisal of Carotid Body Tumors with Remarks on Their Removal. F. H. Lahey and K. W. Warren.—p. 481.
*Posttransfusion Viral Hepatitis as Surgical Complication. L. Ginzburg, L. N. Sussman and H. Auerhan.—p. 492.

Transposition of Colon Segment as Gastric Reservoir.—Lee describes an experimental procedure for transposition of the ascending colon and terminal ileum as an artificial gastric reservoir. The transposition was performed on 19 animals. Of these, eight died in shock before adequate supportive measures were instituted. Of the remaining dogs, six succumbed to leaks due to the presence of ingested hair. Of the other five, two died from obstruction and three survived for 14 days or longer. Thus in no case of ascending colon transposition was death due to circulatory embarrassment as a result of rotation of the right colon and implantation of it in the position of the normal stomach. In three human patients the operation was performed with encouraging results. The patient was a man, 53, who had a large carcinoma involving the greater curvature and posterior surface of the stomach in the region of the spleen. The operation, including incision and closure, required five hours, and the patient received three units of whole blood. He was ambulatory on the second postoperative day. Although the new "stomach" had been in place only 14 days, peristaltic activity was good and the reservoir emptied well. While transposition of the ascending colon is the preferred procedure, a segment of transverse colon might be used in selected cases. The operation, though well tolerated in this case, is of such magnitude that it should not be undertaken as a palliative procedure. Its use should be reserved for those patients in whom there is definite hope of cure. It is hoped that further favorable experience with this operation will serve to remove one of the major objections to total gastrectomy and to increase the salvage rate in gastric carcinoma.

Carotid Body Tumors.—Carotid body tumors are relatively uncommon. Their clinical recognition is difficult, as is the selection of a proper method of treatment. They occasionally surround and fuse with the carotid arteries in such a way that the tumor can be removed only by division of these vessels. These tumors are, for the most part, benign, slowly growing, and relatively asymptomatic. There was no proved instance of malignancy in the true carotid body tumors in the 23 patients observed. There were four deaths in the group, a mortality rate of 17.4%. These occurred in the group of 20 patients in whom the carotid body tumor had been excised, giving a 20% mortality rate for resection. In six patients in whom excision of the tumor was accompanied by immediate ligation of the common, internal, and external carotid arteries the mortality rate was 50%. Since the common carotid artery alone was ligated in two additional patients as a preliminary step to excision of one carotid body tumor and one glomus jugularis respectively, a total of eight patients had ligation of the common carotid artery, with three deaths (37.5% mortality). Because of this forbiddingly high mortality rate, it is concluded that tumors of the carotid body should not be excised when this would require the ligation of the internal, external, and common carotid arteries, unless the tumors are shown by biopsy to be malignant or are enlarging intrapharyngeally so as to interfere with swallowing or cause pain.

Posttransfusion Viral Hepatitis.—Ginzburg and co-workers report 15 cases of homologous serum jaundice following the use of whole blood and review four of these cases. Failure to consider homologous serum jaundice as a cause of delayed postoperative jaundice in patients who have been given transfusions may lead to serious diagnostic and prognostic errors and to hazardous, unnecessary operative procedures. The disease itself may be very serious. In this series the symptoms of onset were relatively mild, consisting of loss of appetite, nausea, and occasionally mild vomiting and diarrhea. Jaundice was sometimes observed before the development of other symptoms. The jaundice lasted between one and three months, reaching its height at about four to six weeks. Once the jaundice subsided there was no recurrence. In five instances in which tests were performed shortly after the subsidence of jaundice, persistence of residual hepatitis was suggested by cephalin flocculation and thymol turbidity tests, which still gave positive results, but to a lesser degree than at the height of the icterus. In three instances in which these tests were repeated four months later, results had become negative. In about half the cases, moderate, smooth, nontender, palpable hepatic enlargement developed and then receded as the patient improved. Jaundice due to either cicatrization following trauma or metastatic neoplasm is almost invariably of an obstructive type, whereas that occurring in homologous serum jaundice is nonobstructive. The authors discuss differentiation of the two types. There is evidence that homologous serum jaundice is caused by a virus in the blood of the donor that is introduced directly into the bloodstream of the recipient. The presence of an undetectable carrier state constitutes a serious danger in the use of "unknown" donors. The authors conclude that blood for transfusion purposes should be supplied from donors whose background are known and whose histories are reliable. Until a laboratory test is available that can exclude carriers of the virus, the danger of transmission of this disease exists and may soon serve as a curb to the ever-increasing use of whole blood just as it did to the use of pooled plasma.

Surgery, St. Louis

29:483-642 (April) 1951

Clinical Physiology of Human Bronchi: III. Effect of Vagus Section on Cough Reflex, Bronchial Caliber, and Clearance of Bronchial Secretions. K. P. Klassen, D. R. Morton and G. M. Curtis.—p. 483.
Relation of Factor of Growth to Pathogenesis of Megacolon, Megaileum, and Megaduodenum. B. Fawcett.—p. 491.
Unusual Lesions of Rectum and Anus. M. O. Hines and J. G. Riddler. —p. 496.
Intestinal Lymph Flow Following Simple Intestinal Obstruction in Rat. D. C. Balfour Jr., J. L. Bollman and J. H. Grindlay.—p. 500.
Technique for Sampling Lymph in Unanesthetized Dogs by Means of Exteriorized Thoracic Duct-Venous Shunt. C. S. Brown and E. Hardenbergh.—p. 502.
Prolongation of Life by Employment of Parenteral Alimentation. P. Nemir Jr., H. R. Hawthorne and B. L. Lecrone.—p. 508.
Adrenal Cortex and Postoperative Gastrointestinal Secretions: Clinical Significance of These Effects. J. D. Hardy.—p. 517.
Solitary Diverticulum of Ascending Colon: Case Diagnosed Before Operation. B. M. Bosworth and F. L. Landau.—p. 523.
Spontaneous Rupture of Esophagus. D. Dunavant and E. F. Skinner. —p. 527.
Management of Familial Polyposis of Colon. R. R. Anschuetz.—p. 532.
Herniations of Cervical Intervertebral Disc and Scalenotomy. H. A. Shenkin and R. A. Groff.—p. 540.
Vertebral Manifestations of Malignant Lymphoma, Myeloid Leucemia, and Multiple Myeloma. R. Mazet Jr.—p. 545.
Tenodesis of Biceps Tendons: Preliminary Report. A. A. Michele and F. J. Krueger.—p. 555.
Experimental Arteriovenous Fistula: Histologic Changes in Small Collateral Arteries. L. H. Bosher Jr., D. E. Smith, R. A. Lemmer and I. A. Bigger.—p. 560.
Anatomic Sketches Photographed on Translite Film: Description of Visual Aid for Conferences and Lectures. M. J. Healy Jr.—p. 568.
Problem of Thyroid Carcinoma. W. H. Perloff and N. G. Schneeberg. —p. 572.

FOREIGN

Arch. "de Vecchi" Anat. Pat. e Med. Clin., Florence

15:849-1316 (Nov.) 1950. **Partial Index**

*Tuberculosis in Thyroid Adenoma. U. Frasson.—p. 1141.

Tuberculosis in Thyroid Adenoma.—Microscopic examination of thyroid adenomas removed from 72 patients in a municipal hospital revealed three cases of tuberculosis of the thyroid. The three patients showed no symptoms or signs of thyroid tuberculosis, and the glands appeared grossly normal, but microscopically they showed granulomas of the tuberculous type outside the colloid-containing cavities of the thyroid. These were readily differentiated from subacute parenchymatous thyroiditis. From the clinical course of the disease and the histopathological findings, the author concludes that thyroid tuberculosis may develop in a normal gland or in an adenoma. It does not, however, stimulate thyroid adenomas.

Australian and New Zealand J. Surgery, Sydney

20:165-244 (Feb.) 1951

Indications for Pulmonary Resection. O. T. Clagett.—p. 165.
Megalocornea and Its Surgical Complications. J. B. Hamilton.—p. 184.
Management of Carcinoma of Prostate. K. Kirkland.—p. 188.
Inversion Operation in Femoral Hernia. C. Craig.—p. 195.
Advances in Cardio-Vascular Surgery. O. T. Clagett.—p. 201.
Marion's Disease or Bladder Neck Stenosis. E. M. Nanson.—p. 215.
Pancreatic Tissue in Wall of Small Intestine. I. H. Ogilvy.—p. 224.
Desmoid Tumour of Abdominal Wall. G. H. Burnell.—p. 232.
Gumma of Lung. M. P. Susman.—p. 235.
Delayed Splenic Haemorrhage: Clinical Study. J. T. Hueston.—p. 238.

British Medical Journal, London

1:543-598 (March 17) 1951

*Syringe Needles and Mass Inoculation Technique. A. Fleming and A. C. Ogilvie.—p. 543.
Post-Gastrectomy Syndromes: Study in Applied Physiology. C. Wells and R. Welbourn.—p. 546.
Effect of Streptomycin on Vestibular Function. J. R. Bignall, J. W. Crofton and J. A. B. Thomas.—p. 554.
Variability of Sperm Count. G. C. Kennedy, N. A. Richards and P. M. F. Bishop.—p. 559.
Case of Masculinovoblastoma. W. H. H. Merivale and L. Forman. —p. 560.
Positive Coombs Reaction in Pernicious Anaemia. J. G. Selwyn and S. S. Alexander.—p. 564.
Case of Painful Swelling of Hand. G. F. Rowbotham.—p. 565.

1:599-652 (March 24) 1951

History and Development of Forensic Medicine. S. Smith.—p. 599.
Successful Breast-Feeding. F. C. Naish.—p. 607.
The Healthy Child: Its Many Disguises. I. Gordon.—p. 611.
Recurrent Syncopal Attacks from Bradycardia in Infant. J. K. Wagstaff. —p. 614.
Management of Bladder in Spinal Injuries. J. C. Ross.—p. 616.
Haemangiomata of Intestine. J. B. Heycock and P. H. Dickinson. —p. 620.
Large Ovarian Cysts. R. J. Last.—p. 622.
Century of Physicians. H. Bashford.—p. 636.

Syringe Needles and Mass Inoculation Technique.—Faulty methods of sterilization of syringes and needles in mass inoculations have been known to result in transfer of infections. Fleming and Ogilvie sought a safe substitute for the dangerous method of changing the needle between each patient. In this paper experimental evidence of the efficacy of the hot oil sterilization method of sterilizing needles is presented. Without being removed from the syringe, needles can be sterilized by immersion for 10 seconds in liquid paraffin at 130 C. or higher. If hot oil is not obtainable, immersion of the needle for 10 seconds in boiling water is effective. Oil is preferable, as the needles remain sharp for a longer time and do not rust. When multiple doses are given from one filling of the syringe there is a second problem to be considered, namely, the possibility of reflux of fluid from the body of the inoculated man into the syringe. Accidental movement of the piston of the syringe or pressure in the tissues may cause such reflux. This method is therefore dangerous, even if the needle is thoroughly sterilized. It has been shown that if only one dose is taken up into the syringe and if, after inoculation, pressure is kept up on the piston until the needle is withdrawn, there is no reflux of fluid into the syringe. This method of inoculation, combined with sterilization of the needle by 10 seconds' immersion in oil at 130 C., seems to be perfectly safe and rapid enough for mass inoculation.

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Deutsche medizinische Wochenschrift, Stuttgart

76:357-388 (March 23) 1951. **Partial Index**

Infectious Mononucleosis. H. Kalk.—p. 357.
Immunity in Virus Hepatitis. E. Weller.—p. 359.
Rheumatic Interstitial Pneumonia. H. Schmidt.—p. 365.
*Injuries of Peripheral Nerves After Injections. K. Kolle.—p. 367.

Injuries of Peripheral Nerves After Injections.—Kolle believes that postinjection nerve injuries are not so rare as the scanty literature indicates. The first case he cites is that of a man in whom an irreparable paralysis developed in the region of the tibial and fibular nerves after a soluble quinine hydrochloride preparation had been injected into the flexor surface of the thigh. The patient had a severe pain, and it was later found that the injection had been made into the sciatic nerve. The patient was unable to work for several years. The middle portion of the flexor surface of the thigh is unsuitable for intramuscular injection, particularly in thin persons. The case of a patient in whom paralysis of the radial nerve developed illustrates that subcutaneous injections also may produce nerve injuries. Several cases are cited in which nerve lesions with impaired sensibility developed after intravenous injections. An anatomic illustration of the bend of the elbow shows that the danger of a nerve injury always exists when a medicament is injected into the vena basilica or the vena mediana cephalica and that, therefore, in this region injections should be made into the vena mediana basilica.

Hospital, Rio de Janeiro

39:315-448 (March) 1951. **Partial Index**

*Vitamin K in Treatment of Bacillary Dysentery. M. F. Krause.—p. 361

Vitamin K in Bacillary Dysentery.—Krause administered vitamin K to three series of adult patients with bacillary dysentery. In the first series of six patients the intramuscular injection of pure vitamin K had no effect on the disease. In the second series of four patients, the oral administration of 5 to 10 mg. of vitamin K with bile salts, four times daily, resulted in cure in three days. Still better results were obtained in the last series by the oral administration of vitamin K without bile salts. The drug was given in doses of 10 mg. every two hours for two days. Cure was obtained on the first day of the treatment. The patients were discharged from the hospital on the third day. The drug was well tolerated. The author concludes that (1) vitamin K kills Shigella disenteriae or (2) bacilli of the coli group lose in certain circumstances the capacity of producing vitamin K and that this loss results in decreased resistance of the host to S. dysenteriae, increased virulence of the organism, or actual transformation of bacilli of the coli group into virulent bacilli of the dysenteric and paradysenteric group.

Journal of Laryngology and Otology, London

65:53-132 (Feb.) 1951

*Surgery of Otosclerosis. T. Cawthorne.—p. 53.
Aural Vertigo: Account of Certain Cases Resembling Ménière's Disease. W. McKenzie.—p. 70.
Aphasia as Symptom of Otogenic Brain Abscess. A. R. Harper.—p. 89.
Tuberculous Mastoiditis Treated with Streptomycin. T. M. Banham and J. Ransome.—p. 102.

Surgical Treatment of Otosclerosis.—Cawthorne reviews the present status of the surgical treatment of otosclerosis. His technique is based on Lempert's nov-ovalis approach, in which a window is made in the anterior part of the bony external semicircular canal and adjacent ampulla. This opening is covered by a flap derived from the skin covering the anterior wall, roof, and posterior wall of the bony external meatus, continuity with the intact tympanic membrane being preserved. The fenestration operation is most likely to be successful when the otosclerotic bone is limited to the region of the oval window. Extensive spread of otosclerotic bone, either over the surface or

into the cavities of the bony labyrinth, renders a patient unsuitable for the operation, therefore, clinical indications of such extensive growth should be carefully sought. These are alteration in the timbre of the voice, intolerance of amplification, disappearance of paracusis, reduction of bone conduction, and pink-tinged tympanic membrane. The operation should be done only by those specially trained for it, and, with a skilled operator, more than two-thirds of the patients can expect lasting improvement in hearing. For those who are unsuitable for or unwilling to face surgery, a good valve-amplified hearing aid usually improves the hearing. Surgery is only part of the management of the patient suffering from this form of deafness.

Lancet, London

1:539-596 (March 10) 1951

Some Recent Studies of Porphyrin Metabolism and Porphyria. C. J. Watson.—p. 539.
*Sensibility of Rectum and Colon: Its Role in Mechanism of Anal Continence. J. C. Goligher and E. S. R. Hughes.—p. 543.
Rapid and Simple Method of Estimating Haemoglobin. G. K. Welch and W. W. Walther.—p. 548.
*Hypotensive Action of Veriloid (Veratrum Viride): Clinical Investigation. R. Kauntze and J. Trounce.—p. 549.
Chronic Non-Tuberculous Abscess at Site of Penicillin Injections. J. Fielding and A. Norris.—p. 566.
Njovera: Endemic Syphilis of Southern Rhodesia: Comparison with Bejel. R. R. Willcox.—p. 558.
Treatment of Prolapsed Cord. L. W. Cox.—p. 561.
Case of True Hermaphroditism. A. W. Capon.—p. 563.

Sensitivity of Rectum and Anal Continence.—Goligher and Hughes describe the sensations produced by distention of the rectum and distal colon. A balloon, mounted on the end of a narrow graduated rubber tube, was inserted into the rectum and the lower part of the sigmoid colon. The balloon was inflated at various levels, and the minimum pressure required to produce sensation and the patient's description of the sensation were recorded. Distention of the bowel up to 15 cm. from the anal orifice caused a sensation of fulness in the rectum, producing the urge to pass gas or feces—a rectal type of sensation. Distention above this level produced a purely abdominal sensation, referred to the suprapubic or left iliac region and simulating a gas pain or intestinal colic—a colonic type of sensation. Interruption of the nerve supply to the rectum and colon by anesthetic block or operative division showed that the colonic type of sensation is mediated by the sympathetic system and the rectal type by the parasympathetic system. Balloon distention causing rectal sensation evoked a contraction of the external sphincter ani that appeared to be partly reflex and partly voluntary. This was never produced by colonic distention. A rectal type of sensation never develops in the terminal colon after colostomy but may develop to a small degree in stumps of colon drawn into the pelvis by sphincter-saving resections. This spurious rectal sensation is unfortunately no adequate substitute for genuine rectal sensation in the maintenance of anal continence. Hence, in the performance of sphincter-saving excisions, if a good functional result is to be insured and "sensory incontinence" avoided, it is essential to preserve undamaged not only the sphincter muscles but also at least 6 cm., and preferably 8 cm. or more, of anorectal stump with its parasympathetic nerve supply.

Hypotensive Action of Veriloid.—Veriloid is a stable extract of veratrum viride biologically standardized according to its vasodepressor effect in dogs. Its three major effects are hypotension, emesis, and bradycardia. It was administered by mouth to 10 hospitalized patients (five men and five women) with hypertension and intravenously to an 11th patient. Given by injection it rapidly reduces the blood pressure, so that it should prove of value in hypertensive encephalopathy and the convulsions of puerperal eclampsia. Given orally, its absorption is difficult to control and its effect lasts a relatively short time, with the result that uniform lowering of the blood pressure is not readily obtained; but the variations can be kept at a lower level, and symptomatic relief is usually attained. The margin between therapeutic and toxic levels, where high dosage is necessary, is small. This makes the fixed arteriosclerotic type of hypertension unsuitable for treatment. Because of vagus action, veriloid is best avoided in the presence of peptic ulceration. Its main field of usefulness is in the younger patients with severe benign or malignant hypertension and possibly in those with chronic nephritis.

1:597-646 (March 17) 1951

*Infection of "Clean" Surgical Wounds by Surgeon and from Air: Work and Ventilation of Operating-Theatre. G. R. Girdlestone, R. B. Bourdillon and A. M. McFarlan.—p. 597.
Treatment of Tick-Borne Relapsing Fever: Neoarsphenamine and Other Remedies. N. F. Coghill.—p. 604.
Activity of Plasma Labile Factor in Disease. M. Stefanini.—p. 606.
*Haemophilus Influenzae Meningitis Treated with Streptomycin: Difficulties in Diagnosis. E. C. Allibone, J. D. Pickup and K. Zinnemann.—p. 610.
Nitrogen Mustard and Urethane in Treatment of Nasopharyngeal Carcinoma. F. E. Stock.—p. 612.
Sensitivity to Mercurial Diuretics: Report of Two Cases. C. A. Foster and P. F. D. Naylor.—p. 614.
Urticaria Following Adrenaline but not Noradrenaline. H. Herxheimer.—p. 615.
Lichen Striatus. H. Lee.—p. 615.
Preservation of Typhoid Vaccine. D. W. Henderson, S. Peacock and J. Richley.—p. 618.

Infection of "Clean" Surgical Wounds.—Prophylaxis of "clean" surgical wounds includes the care of the patient as a whole and of the tissues of the wound in particular, and many preventive procedures, including the good design and ventilation of the operating theater. A case is reported in which a wound became infected with a type 27 hemolytic Streptococcus, a coagulase-positive Staphylococcus, Aerobacter aerogenes, and Bacillus mesentericus after a clean operation. The source of the Streptococcus was not determined. A coagulase-positive Staphylococcus was found in the nose of the operating room nurse but the many possible reservoirs of staphylococci in the noses of the visitors and on the skin of those taking part in the operation were not investigated. A. aerogenes and B. mesentericus were isolated from an unsterilized roll of plaster wool. The application of a plaster over unsterilized materials may allow organisms to penetrate the sterile dressings. Plaster wool exposed on a trolley in the plaster room may be contaminated by organisms present in the air. It is suggested that efficient masks should be provided for all those present at operation. All plaster wool used under a plaster should be autoclaved and should be unwound and rolled loosely, so that it will be penetrated by steam. Plaster wool should not be exposed on trolleys either before or after sterilization.

Streptomycin in Hemophilus Influenzae Meningitis.—Eleven patients between the ages of 4 and 22 with Hemophilus influenzae meningitis were treated with streptomycin for one to 60 days. Only five had presenting symptoms suggesting involvement of the central nervous system. Three were thought to have gastroenteritis and two an upper respiratory infection. As a result, diagnostic lumbar puncture in these cases was delayed for five to 30 days after the onset of the illness. In three patients, a spinal block developed and death followed. Necropsy revealed that both cerebral hemispheres were almost covered, and the spinal cord was encased in tenacious pus. Seven patients recovered, and one patient became demented and blind. In all the patients the strains of H. influenzae isolated were type b. The organism was sensitive to streptomycin in a concentration of two to 10 units per cubic centimeter. In four patients the cerebrospinal fluid became sterile in 24 hours. No streptomycin-resistant strains developed in any of the patients. The levels of streptomycin in the cerebrospinal fluid 24 hours after an intrathecal injection of 20-50 mg. of streptomycin were four to 64 units per cubic centimeter. When upper respiratory infections are prevalent in children, it is not easy to detect that a feverish cold is due to a more serious infection. Still more difficult is it to revise an established diagnosis. Meningism and convulsive phenomena should be accorded the respect that their possible etiology warrants. Earlier diagnosis by lumbar puncture is essential if the results are to be improved.

Medical Journal of Australia, Sydney

1:317-352 (March 3) 1951

Intubation, Enterostomy, and Laparotomy: Their Place in Treatment of Intestinal Obstruction. C. Gale.—p. 317.
Report of Two Cases of Herpes Zoster Treated with "Chloromycetin." N. F. Babbage.—p. 339.

Medizinische Klinik, Munich

46:317-348 (March 16) 1951. **Partial Index**

Question of Metabolic Disturbances in Males with Hypogenitalism. H. Wefelscheid.—p. 322.
Clinical Observations in Course of an Epidemic of Poliomyelitis. H. Laubmann.—p. 324.
*Heredity of Diabetes Mellitus: Question of Advisability of Marriage of Diabetic Patients. H. Thöne.—p. 327.
Local Application of Penicillin in Puerperal Mastitis with Abscess Formation. H. Lüffe.—p. 332.

Heredity of Diabetes Mellitus.—The question whether it is advisable for diabetic patients to marry induced Thöne to investigate the familial occurrence of diabetes mellitus in a group of 130 diabetic patients. Forty-one (31.5%) of these patients had persons with diabetes mellitus among their blood relatives. In 15 of these patients one of the parents was diabetic (nine mothers and six fathers); in three, one of the parents as well as siblings had diabetes; in six, one of the grandparents was diabetic, whereas the parents were not; in about one-fourth of the patients siblings were diabetic, and conjugal diabetes was found in two couples. When diabetes was transmitted from parents to child, it appeared at an average age of 52, whereas when a grandparent was diabetic it became manifest at an average age of 36. Patients who have diabetic siblings usually become diabetic at about the age of 46. Anteposition was quite evident; that is, even if diabetes appeared at an advanced age in the older generation it was likely to appear earlier in the later generation. A predisposition to diabetes is hereditary, but the transmission is oftener recessive than dominant. Although the likelihood of developing the disease is much greater for a child with a familial predisposition to diabetes than for one without such predisposition, the author does not believe that a diabetic person should be forbidden to marry, at any rate, not if the partner is free from metabolic disorders. If both partners have a family history of diabetes, then the likelihood of diabetes in the offspring is great.

Münchener medizinische Wochenschrift, Munich

93:449-496 (March 9) 1951. **Partial Index**

Amenorrhea. G. Döderlein.—p. 449.
Depot (Slow Acting) Female Hormone Preparations in Gynecology. L. Nürnberger.—p. 453.
*Treatment of Anemia with Cobalt Compounds. H. Wolff and S. Barthel.—p. 467.

Treatment of Anemia with Cobalt Compounds.—Wolff and Barthel studied several cobalt compounds for their hematopoietic effects, possible secondary effects, and dosage in human anemia. Of 81 patients with various forms of anemia they treated 36 with intravenous injections of water-soluble cobalt chloride and 40 with intramuscular injections of an amino acid complex of cobalt. The intravenous injection of water-soluble cobalt had undesirable secondary effects in some patients, whereas the amino acid complex of cobalt was tolerated without such reactions. The latter complex is thus the preparation of choice. The reaction to dosage was tested by administration of 2.5 mg. of cobalt on the first day and 5 mg. on the second day. Thereafter, sensitive persons were given once or twice daily 2.5 mg. of cobalt, while persons with normal reactivity were given 5 to 10 mg. once or twice daily. Undesirable secondary effects were thus avoided, and treatment could be continued for the required period of 10 to 30 days. The small doses of cobalt exerted a decided erythropoietic stimulus. With the exception of pernicious anemia and macrocytic anemia, cobalt therapy is effective in almost all forms of anemia, particularly in those forms in which the bone marrow is slow to respond and requires a more potent stimulus than iron therapy.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

95:497-592 (Feb. 17) 1951. **Partial Index**

*Insufflation of Air Under Skin as Therapeutic Method in Pleurisy. J. C. Gerrits.—p. 515.
Spinal Paroxysmal Hypertension. M. Koster, J. M. van der Valk, M. Frenkel and J. Groen.—p. 520.

Insufflation of Air Under Skin in Pleurisy.—According to Gerrits, there have been several reports in the literature concerning the effectiveness of the insufflation of about 50 cc. of air under the skin of chest or back in the resorption of the exudate in pleurisy. This insufflation was given once a week and proved entirely harmless and usually painless. The air is injected on the side of the pleuritic process and spreads over a rather large surface. It stimulates the skin and the subcutaneous tissue, and by reflex paths, the deeper organs, in this case, the pleura and lung, and it promotes the absorption of the exudate. It is suggested that cutovisceral reflexes are involved in this mechanism. So that the needle will not enter a blood vessel and cause an air embolism, suction is applied with the syringe plunger. The author used this treatment in 17 patients with exudative pleurisy. The treatment was ineffective in five of the patients, and in the others the absorption of the exudate was greatly or moderately stimulated and accelerated.

Nordisk Medicin, Stockholm

45:225-260 (Feb. 14) 1951. **Partial Index**

*Gastric Insufficiency: Diagnosis, Sequels and Treatment. E. Forsgren.—p. 229.
Aureomycin Therapy in Paratyphoid Due to Salmonella Enteritidis. A. Põldre.—p. 233.
Treatment with Vitamin D_2 in Lupus Vulgaris of Nasal Mucosa. G. M. C. Eskelund.—p. 236.
Typhoid Carrier Cured with Chloramphenicol. H. Kvadsheim.—p. 240.
Death Following Intravenous Urography. K. Fischermann and J. Ostenfeld.—p. 240.

Gastric Insufficiency: Diagnosis, Sequelae, and Treatment.—Forsgren says that the results of a single Ewald test breakfast will often be misleading, and the test breakfast should be supplemented by a test dinner containing meat, which, with its buffer action, is calculated to show the insufficiency of a small secretion of gastric juice produced by excitation with histamine; the addition of cubes of coagulated egg white will facilitate evaluation of the degree of digestion. The frequency of achlorhydria increases with age and will be a grave problem in geriatrics. Malnutrition of gastrogenic kind may lead to pernicious anemia, myelopathy, epithelial symptoms, and impairment of the phagocytic defense against infections. The author estimates that the incidence of tuberculosis is about 10 times as high in persons in whom gastrectomy has been done as in the general population. Gastric insufficiency can be compensated in high degree by carefully prepared food and a physically and mentally hygienic mode of life. Diarrhea and meteorism due to gastric insufficiency as a rule respond to treatment. Concentrated liver preparations and vitamin B are indispensable in the treatment of pernicious anemia and myelopathy. In total achlorhydria an attempt should be made by hydrochloride acid administration to restore the normal pH in the alimentary tract and normalize the bacterial flora in the gastroduodenal segment. Gastrogenic damages to the nervous system are not always wholly reversible, and therefore treatment should be begun early. A psychogenic gastric insufficiency is reversible, at least at an early stage; psychotherapy and antiachylic treatment are important. Treatment of gastric insufficiency after stomach resection often entails great difficulties. The resources for compensating postoperative gastric insufficiency are limited.

45:261-300 (Feb. 21) 1951. **Partial Index**

Ultrasonics in Biology and Medicine. S. Dalgaard.—p. 261.
*Hyperparathyroidism. J. Hellström.—p. 263.
*Subdural Tapping. J. Vesterdal and T. Walther.—p. 268.
*Paper Partition Chromatography of Histidine in Urine in Normal Pregnancy and Pregnancy Complicated with Preeclampsia. H. Zilliacus.—p. 271.
Duodenal Ulcer and Stomach Motility. M. S. Hansen.—p. 272.
Cases of Cardiac Arrest During Operation Treated Successfully. E. Millbourn, E. Nilsson and B. Eyrich.—p. 273.
Hemangioma of Kidney. K. Liavaag.—p. 276.

Hyperparathyroidism.—Hyperparathyroidism is characterized primarily by a disturbance in calcium metabolism. The most pronounced symptoms are skeletal calcification, usually in the form of so-called osteitis fibrosa generalisata, and calcium de-

posits in the kidneys. The prognosis after parathyroidectomy depends mainly on the degree of renal damage at the time of operation. Some improvement in renal function is possible after parathyroidectomy, but the damage usually remains or progresses. Evaluation of the prognosis requires a long observation period, as patients may apparently be well for many years but ultimately die from sequelae of the hyperparathyroidism. Renal injury is an early sign of the disease; it is ascribed to calcium deposits in the tubular epithelium and to vascular changes and is expressed by hyposthenuria and polyuria. There is usually increased blood pressure, which becomes more and more manifest and is an important cause of the unfavorable prognosis. Since early diagnosis and operative treatment are of decisive importance, the possibility of hyperparathyroidism should be borne in mind in cases of renal calculus, especially in multiple bilateral concrements, and examination of the blood calcium should be made in all patients with symptoms that might depend on hyperparathyroidism. Parathyroidectomy is the only treatment to be considered. Radiotherapy is ineffective and delays operation. Excision of the affected gland suffices in the case of adenoma. In diffuse hyperplasia, resection should be as complete as possible without risk of tetany, but partial parathyroidectomy may result in improvement. There were skeletal changes in eight of the 23 cases of hyperparathyroidism, renal calcification in nine, and both symptoms in six cases. Follow-up examination of 10 patients with solitary adenoma more than two years after the operation showed that the general condition and ability to work were often good for years, and in five patients with solitary adenoma operated on in 1950 the immediate result is excellent, but only one patient has normal renal function. The five patients with diffuse hyperplasia operated on showed improved general condition and ability to work despite continued increased blood calcium; of the four observed for over 10 years one died from uremia, two are disabled because of hypertonia, and one patient is still able to work.

Subdural Tapping.—Subdural hematoma is ascribed to trauma of the head during birth or later; this trauma may be slight and unnoted. Subdural tapping has been performed in the children's department of the Rikshospital since 1947 in the diagnosis and treatment of subdural hematoma. Vesterdal and Walther report 248 punctures, 201 for diagnostic and 47 for therapeutic purposes, in infants aged from 1 day to 19 months. Effusion of cerebrospinal fluid into the subcutaneous tissue occurred in many cases but was without significance; no other side effects were noted. Pathological fluids were found in 12 cases. In the five cases described, subdural hematoma was confirmed at operation. One patient died before further examination could be made, in two patients ventriculography failed to disclose subdural hematoma, and in four operations revealed other intracranial hemorrhage or hydrocephalus. The authors warn that since there may be a wide, free zone between the hematoma and the midline the tapping should be done as laterally as possible. Diagnosis of subdural hematoma on the basis of clinical symptoms alone is extremely difficult or impossible, and subdural tapping should therefore be used together with lumbar puncture in the examination of infants with obscure cerebral symptoms.

Paper Chromatography of Urine in Pregnancy and Preeclampsia.—Dent's modification of paper partition chromatography for qualitative analysis of free amino acids in the urine was used by Zilliacus for identification of histidine in the urine of nonpregnant women, in normal pregnancy, and in pregnancy complicated by toxemia. He finds his results support earlier observations that no histidine or only traces of histidine appear in the urine of nonpregnant women, that histidine in the urine is the rule in normal pregnancy, and that histidinuria decreases or disappears in patients with symptoms of toxemia of pregnancy. The absence of histidine in the urine in a patient with toxemic hydatid mole suggests that placental or endocrine factors are involved in the disappearance of histidine from the urine in toxemia of pregnancy.

Presse Médicale, Paris

59:325-344 (March 17) 1951

Tuberculosis as Obligatorily Reportable Disease. G. Poix and É. Bernard.—p. 325.
Action of Oxygen Inhalation in High Mountain Climbing. J. Oudot. —p. 326.
*First Cases of Cure of Primary Pneumonic Plague Obtained with Streptomycin. F. Estrade.—p. 328.

Streptomycin in Primary Pneumonic Plague.—Two patients, a man, 19, and a woman, 25, with primary pneumonic plague, were treated with streptomycin on the island of Madagascar. The total dose of the drug over a six day period was 25.75 gm. With this relatively small dose, Pasteurella pestis was still present in the sputum of the patients 20 hours after the institution of the treatment but the organisms had lost much of their virulence and were no longer capable of killing guinea pigs. Temperature was restored to normal on the sixth day, and the patients were convalescent. It appears that in vivo streptomycin rapidly effects the virulence of the pathogenic agent before a bacteriolytic action can be manifested. Systematic roentgenologic examination was made of the female patient before treatment and on the second and eleventh days after the institution of treatment. Characteristic foci of confluent bronchopneumonia were observed at the first examination; some clearing was noticeable at the second examination, and complete clearing was observed at the last examination. The therapeutic success, the economy of the therapy, and the fact that the contagious period of the patient has been limited to a short time are to be considered of greatest importance in pneumonic plague. Antiplague serum therapy, previously practiced in Madagascar, failed to cure pneumonic plague, and streptomycin was the only drug with which a cure was obtained. Systematic roentgenologic examination of persons who have been exposed to the infection may be a means of early diagnosis of pneumonic plague.

Quarterly Journal of Medicine, Oxford

20:1-92 (Jan.) 1951

The Electrocardiogram in Hypertension. A. W. D. Leishman.—p. 1.
Cholinesterase Activity of Blood and Muscle in Myasthenia Gravis. A. Wilson, G. A. Maw and H. Geoghegan.—p. 13.
Cholinesterase Inhibition and Signs and Symptoms in Myasthenia Gravis. A. Wilson, G. A. Maw and H. Geoghegan.—p. 21.
*Contribution to Pathology of Sjögren's Disease. P. Ellman, F. Parkes Weber and T. E. W. Goodier.—p. 33.
Primary Staphylococcal Pneumonia. M. O. J. Gibson and J. R. Belcher. —p. 43.
*Felty's Syndrome: Report of Four Cases Treated by Splenectomy. M. S. R. Hutt, J. S. Richardson and J. S. Staffurth.—p. 57.
Aplastic Anaemia. T. H. Boon and J. N. Walton.—p. 75.

Sjögren's Disease.—The occurrence of Sjögren's disease in a woman 34 is reported. She complained of dryness of eyes, mouth, and throat, and a dry cough aggravated by talking. Symptomatic treatment of the eyes with cod liver oil drops gave symptomatic relief. Attempts to increase the salivary secretion by pilocarpine, acetyl-beta-methylcholine chloride and physostigmine were unsuccessful. For alleviation of the dryness of the bronchial mucosa, the patient was kept for two weeks in a steam tent. This had no beneficial effect on the respiratory condition but seemed to have aggravated the patient's arthritis. A spontaneous pneumothorax developed on the right side, associated with dyspnea and cyanosis. Silver nitrate pleurodesis produced gradual adhesion of the pleural surface of the right lung. However, a gradual downhill trend developed. Death resulted from acute bronchopneumonia. Necropsy was performed, and microscopic examination of the lacrimal, parotid, and sublingual glands, of the conjunctival, buccal, nasal, and nasopharyngeal mucosa, and of the mucosa of the epiglottis, larynx, trachea, bronchi, esophagus, and their subjacent secretory glands confirmed the view that the pathological basis of the dryness of the mucous membranes and skin consists of a chronic inflammatory atrophy of unknown causation involving the salivary, lacrimal, mucosal, and sweat glands. This dryness may give rise to obstructions in the parotid and salivary glands and in the bronchial tubes, resulting in a secondary inflammatory granulomatous process and possibly suppuration.

Felty's Syndrome.—The results of splenectomy in four patients, one man and three women, with Felty's syndrome are reported on. All the patients had the characteristic triad of rheumatoid arthritis, splenomegaly, and neutropenia. There was an interval of five years between the onset of arthritis and the development of splenomegaly and leukopenia in two patients, and an interval of about 20 years in the two other patients. The arthritis was therefore advanced, and permanent deformities of some joints were present. The preoperative blood picture of all the patients showed anemia. The white blood cell count varied considerably, but in each case it was well below 3,000 per cubic millimeter at its lowest. Severe buccal ulceration often associated with neutropenia was a distressing feature in two patients. Splenectomy led to rapid cure of the ulcers in the mouth. Only one patient showed definite, measurable improvement in the joints, and the results made it clear that splenectomy should not be regarded as a treatment for the joint condition itself. There was an immediate postoperative increase in white blood cells in every patient, which was maintained for over a year. In every case the most striking feature was the improvement of general health. Felty's syndrome is probably merely a peculiar variant of rheumatoid arthritis and not a separate entity. Neutropenia, on which most emphasis was laid, is entirely secondary to hypersplenism, which may occur in any disease in which splenomegaly is a feature. The authors feel that, provided there are no associated diseases that would contraindicate surgical intervention, splenectomy should be performed in all cases. The resultant restoration of the white blood cell count to normal clears up the associated infective processes and improves the general health of the patient.

Radiologia Medica, Turin

37:1-56 (Jan.) 1951

*Carcinomas of Mouth and Pharynx Treated from 1928 to 1945: V. Results of Roentgenotherapy of Carcinomas of Hypopharynx (37 Cases). Clinicostatistical Study. B. Antoniazzi.—p. 35.

Roentgenotherapy of Carcinoma of Hypopharynx.—The author reports results of roentgen therapy in 37 cases of cancer of the hypopharynx. The group included 35 men and two women. Most of the patients were over 50. The cancer was advanced in all cases. It was located in the upper larynx in 15 cases and in the lower half in 22 cases. A biopsy was made in 20 cases. It showed spinocellular cancer in 17 cases and basocellular cancer in three cases. The treatment consisted of local roentgen therapy of the cancer lesion and the regional lymph nodes followed by ample removal of all the metastatic regional lymph nodes. The author describes the technique, dosage, and duration of the roentgen treatment. In the cases reported the hypopharyngeal cancer was vegetating in 11 cases, infiltrating and vegetating in 13, and infiltrating in 13. Metastases in the regional lymph nodes were encountered in 16 patients, six with cancer in the upper larynx and 10 with cancer of the lower larynx. The metastases were unilateral in 13 cases and bilateral in three. Neither contralateral lymph node nor visceral metastases were observed, although no necropsies were done. The four patients living five years after discontinuation of the treatment are normal, without any recurrence of cancer.

Rev. Española de Obstetricia y Ginecol., Valencia

8:1-48 (Jan.-Feb.) 1951. **Partial Index**

*Treatment of Trichomoniasis Vaginalis with Tyrothricin. J. M. Sánchez Ibáñez.—p. 15.

Treatment of Trichomoniasis Vaginalis with Tyrothricin.—Five cases of trichomoniasis vaginalis were treated by the author with a powdered mixture of 50 mg. of tyrothricin and 100 gm. of boric acid with good results. All patients were married women; one was pregnant. All had leukorrhea and acute pruritus vulvae. Gonococcus and cervical erosion were present in one patient and staphylococcus in another. Treatment consisted of a vaginal douche with 5% lactic acid and insufflation of the tyrothricin-boric acid mixture into the vagina, every other day. Bacteriologic examination of vaginal smears became negative in all cases after the first application of the drug. The treatment was given at least four times. Patients were considered cured after three monthly bacteriologic examinations of vaginal smears following the menstrual period gave negative results. The author advocates the powdered form of tyrothricin, because of its easy application and stability in the vaginal cavity and cul de sac, without inconvenience to the patient. Tyrothricin therapy significantly shortens the course of treatment as compared with other drugs.

Schweizerische medizinische Wochenschrift, Basel

81:271-294 (March 24) 1951. **Partial Index**

Alcohol and Highway Accidents. M. H. Thélin.—p. 271.
Vitamin B_{12}. M. Tausk.—p. 275.
Question of Origin of Resistance of Mycobacterium Tuberculosis to Streptomycin. P. Zadik.—p. 281.
*Treatment of Pertussis with Chloramphenicol and Aureomycin. F. Buser. —p. 282.

Chloramphenicol and Aureomycin in Pertussis.—Forty-two patients with pertussis, 23 between 1 and 4 years old, 16 between the ages of 4 and 7, and three adults, were treated with chloramphenicol (chloromycetin®). Treatment was instituted at the beginning of the paroxysmal stage. The patients did not receive antipertussis serum before they were given chloramphenicol. The antibiotic was given by mouth in doses of 50 to 60 mg. per kilogram of body weight daily for four to eight days. Chloramphenicol aerosol was administered to five patients with an inhalation apparatus three to four times daily for 10 minutes. Twenty patients with pertussis, four nursing infants, 11 children between the ages of 1 and 4, and five between the ages of 4 and 7 were treated with aureomycin. For six to eight days, 25 mg. of the drug per kilogram of body weight was administered daily. Both chloramphenicol and aureomycin favorably influenced the course of the disease and the number and severity of the paroxysmal attacks. Neither drug caused untoward reactions, and there was no distinct difference between their effectiveness. A comparison of graphic recordings of the paroxysmal attacks of cough in patients with pertussis treated with antibiotics (chloramphenicol and streptomycin) or human pertussis immune serum revealed that similar satisfactory results were obtained with both the therapeutic methods. Chloramphenicol and aureomycin had a somewhat more rapid effect than streptomycin. The immune serum is considered superior to any other therapy in infants with severe toxic pertussis associated with attacks of asphyxia, while the antibiotics seem to be more reliable in bronchopneumonia associated with pertussis. Combined treatment with antibiotics and human pertussis immune serum seems to be advisable in infants and children with severe pertussis.

Semaine des Hôpitaux de Paris

27:787-832 (March 10) 1951. **Partial Index**

Excision of Large Superficial Petrosal Nerve and Cephalic Forms of Neurovascular Disease. J. N. Taptas.—p. 787.
Attempt to Treat Delayed Mental Development in Children by Jugulocarotid Anastomosis. M. R. Klein, J. Lepintre, G. Tardieu and J. P. Held.—p. 792.
*Cerebral Scars in Children. M. R. Klein, J. Lepintre, G. Tardieu and R. Galez.—p. 796.

Cerebral Scars in Children.—In a cerebral scar there is a diffuse fibrous neuroglial hyperplasia, which tends to spread into the subcortical area and toward the ventricle, exerting an inhibitory effect on the neighboring and distant healthy tissue. The site and extent of the scar may be ascertained by clinical investigation, electroencephalographic recordings and ventriculography. Hemiplegia, epileptic seizures and delayed mental development, occurring independently or together, are the main neurological syndromes produced. Surgical excision or undercutting of the scar was performed by the authors on 50 patients in whom delayed mental development was associated with hemiplegia or epileptic attacks or both. Thirty-seven patients were followed up for several months to three years. Eighteen patients showed definite improvement, 17 were unchanged and two died, one within several hours after the operation and one within seven days. Eighteen of 33 patients with hemiplegia and three of 26 with epileptic seizures were improved, with one possible cure. Three of 23 patients with delayed mental development were improved, with an increase of about 10 in the intelligence quotient. Ten of 16 patients with a scar limited to the white

matter exclusively showed improvement. None of the four patients in whom the scar had spread to large areas of the cortex were improved. Eight of 17 patients with involvement of the subcortical area showed improvement. Six of eleven patients with a scar in the rolandic area and seven of nine patients with a scar in the frontal region were improved. Five of 14 patients with a scar in the parietal region showed improvement. Treatment failed in two patients with a scar in the occipital region and in one patient with a scar in the temporal region. The operative technique varied according to the site and the extension of the scar. Total excision of the scar was performed when it was limited to a small area, while subcortical cutting without excision of an extensive scar was done in 14 instances to isolate the lesion from the healthy tissue. Definite improvement resulted from the latter intervention in 10 instances. The risk associated with surgical treatment is to be considered minimal despite the importance of the operation, and the reported results are believed to be satisfactory and encouraging.

27:865-910 (March 18) 1951. **Partial Index**

Present State of Means of Study of "Essential Epilepsy" on a Symptomatic Basis. J. Guillaume, G. Mazars and Y. Mazars.—p. 865.
*Present State of Surgical Treatment of Epilepsy. J. Guillaume, G. Mazars and Y. Mazars.—p. 871.
Neuroendocrine Syndromes and Ventricular or Cisternal Hydrops. J. Guillaume, R. Rogé and R. Djindjian.—p. 876.

Surgical Treatment of Epilepsy.—Of 78 patients with focal epilepsy who were subjected to excision of the cortex under electrocorticographic control, only 11 were found to have an epileptogenic focus with a brachial or crural motor or sensory localization, while 42 had a temporal or insular focus, and 14 a frontal focus. Clinical observations thus would have permitted a definite localization in only one-seventh of the patients. The authors have abandoned the classic procedure of electrical stimulation of the brain for establishing the topography of the cortical lesions. They prefer localization by means of electrocorticographic recording with the use of eight articulated electrodes placed in lines on the exposed cortex. The motor cortex is characterized by an electrical activity consisting nearly exclusively of beta waves, so that it can be identified without the aid of electrical excitation. The method of extending the cortical excision until any abnormal electrical activity has disappeared appears to be the most reliable one for the surgical treatment of focal epilepsy. It is indicated in patients with severe epileptic attacks that occur frequently and are not completely controlled by medication and in patients in whom disturbances of character persist despite the disappearance of the attacks. Thirty-two patients operated on according to this method were followed for two years. According to Penfield's criteria, good to excellent results were obtained in 21 of these 32 patients (64%). Medication could be discontinued within several weeks of the operation without inconvenience in seven of the 32 patients. One patient who before the operation had agoraphobia and attacks of aura vertiginosa was able to resume his former profession as a traveling salesman. A child who before the operation had been placed in an institution for incurable children did not have any attacks for two years after the operation, was able to attend school regularly, and no longer required medication. In one patient Jacksonian attacks in the lower extremity disappeared completely, and there was no secondary motor disturbance, although the epileptogenic focus was located adjacent to the paracentral lobule. Highly satisfactory results were obtained with the excision of the insular cortex in nine patients, none of whom had any attack after the operation. Recovery without sequelae was obtained also in patients with severe neurovegetative disturbances. In six patients the character disturbances disappeared simultaneously with the epileptic attacks, but these disturbances persisted in three others despite the disappearance of the attacks. In a number of patients attacks could be controlled by drugs to which the patients had not responded before the operation. In certain cases reoperation may be preferred to an extensively and perhaps unnecessarily mutilating first intervention.

South African Medical Journal, Cape Town

25:105-120 (Feb. 17) 1951. **Partial Index**

Treatment of Leptomeningitis: Report of 50 Cases Treated at Witwatersrand Mine Hospital. T. H. Stewart.—p. 105.
Whooping Cough Epidemic in Urban Native Location. H. T. Phillips. —p. 110.
*Double Duodenal Ulcer with Perforation Following Burn. M. R. Mynhardt.—p. 1

Double Duodenal Ulcer Following Burns.—Mynhardt reports the case of a woman, 34, who sustained second and third degree burns, involving 60 to 64% of the body surface, when her clothing caught fire. Petrolatum gauze and pressure dressings were applied. Penicillin and streptomycin were given. Shock was combated by blood and serum transfusions and by other intravenously administered fluids. The diet was high in proteins and vitamins. When contracture deformities of hips and feet began to develop, a plaster bed was constructed. Except for occasional small rises in temperature the patient progressed favorably for several weeks. Then she began to deteriorate rapidly; abdominal tenderness and signs of peritonitis developed. There was temporary improvement following treatment with aureomycin, penicillin, vitamin K, heparin, and a digitalis preparation, but then signs of hypostatic pneumonia appeared, and death followed. At necropsy a Curling's ulcer approximately ¾ in. (1.91 cm.) long and irregular in shape was found 1 in. (2.54 cm.) distal to the pyloric sphincter on the anterosuperior wall of the first part of the duodenum. The ulcer had perforated but was sealed off by omental adhesions. A blackish discoloration (due to local thrombosis) around the edge of the ulcer was a prominent feature. A more circular, unperforated ulcer was present in the second part of the duodenum. The history, etiology, and histopathology of Curling's ulcer are discussed. The most widely accepted theory of the etiology of this ulcer is that it results from local thrombosis, which in turn is caused by the toxemia and sepsis associated with burns.

Union Médicale du Canada, Montreal

80:153-284 (Feb.) 1951

Various Therapeutic Aspects of New Antibiotics and of Penicillin. L. N. Larochelle.—p. 157.
*New Methods for Diagnosis and Treatment of Syphilis. J. Archambault. —p. 173.
Evolution of Therapy of Urethritis. L. Sylvestre.—p. 183.
Treatment of Nontuberculous Diseases with Streptomycin. J. Prévost. —p. 187.
Thyroidectomy. C. E. Grignon, R. Grignon and J. Grignon.—p. 193.

Diagnosis and Treatment of Syphilis.—The use of penicillin has profoundly changed the treatment and the prognosis of syphilis. In the majority of the cases, early infection yields to a total dose of 5,000,000 to 6,000,000 units of penicillin administered in the course of 10 days. Institution of this treatment during pregnancy almost certainly prevents the congenital infection, and it greatly simplifies the treatment of late syphilis. Neurosyphilis, if diagnosed in the preclinical period or before irremediable destruction of tissues has occurred, may in general be arrested by repeated courses of penicillin, and malaria therapy may be required in only a few particularly resistant cases. A positive qualitative reaction of the blood, the cerebrospinal fluid or both to the various tests should not be considered sufficient for establishing the diagnosis or prognosis of syphilis. Quantitative serologic tests and a thorough evaluation of the clinical manifestations are indispensable. In cases of late syphilis, the disease process can be definitely checked and the spirochetes completely destroyed while the blood or even the cerebrospinal fluid still gives positive reactions to the Wassermann or Kahn tests. Consequently, an isolated positive reaction to a serologic test is not necessarily an indication of active infection that requires treatment. The serologic curve, the duration of the infection and the total amount of treatment received represent the essential considerations for the institution, conduct and discontinuation of treatment of syphilis.

BOOK REVIEWS

Yellow Fever. Edited by George K. Strode, M.D., Director, International Health Division, Rockefeller Foundation, New York. Cloth. $9.50. Pp. 710, with 77 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1951.

This distinguished volume is not a history of yellow fever of olden days, with its frequent epidemic visitation during the 18th and 19th centuries to the east coast and gulf ports of the United States and to the cities of Southern Europe. Nor is it a narrative of the discoveries, made by Finlay, by Reed and his colleagues and by Gorgas, of the etiology, epidemiology, and control of urban yellow fever. While these dramatic events are briefly considered in their appropriate setting, this book is primarily an account of the investigations of the Rockefeller Foundation. During the period 1916-1949, 422 articles on yellow fever were published by staff members of the Foundation, which made a financial contribution of nearly 14 million dollars to carry out these projects.

Following a preface by Dr. Strode, there are 10 separate sections, each consisting of several closely related chapters, viz., (1) Landmarks in the Conquest of Yellow Fever, (2) The Virus, (3) Pathology, (4) Immunology, (5) Arthropod Vectors, (6) Mammalian Host, (7) Clinical Aspects and Diagnosis, (8) Epidemiology, (9) Control, and (10) Costs and Man Power. All of this information has been woven together into an unusually lucid narrative. Even the most technical material is clearly presented. Written by experts, the data are authoritative and are probably as objectively presented as is humanly possible. Although no attempt has been made to provide an exhaustive treatise, the facts presented are quantitatively impressive, while the findings constitute valuable scientific knowledge and at the same time important landmarks in the prevention of the disease.

Briefly considered, the most significant developments in the campaign against yellow fever from 1916 to the present time have been twofold. In the first place, while effective control of Aedes aegypti, the vector of epidemic urban yellow fever, eliminated the danger of outbreaks in nontropical areas as in the United States, it did not provide the same degree of safety for cities in South America or tropical Africa. Marginally rural epidemics developed which at times spread to the cities. Fundamentally, yellow fever was found to be a disease not of human populations but of dense tropical forests, where it is enzoötic and epizoötic among monkeys and at times other mammals, and is transmitted by sylvatic mosquitoes. Human entry into these enzoötic areas or the egress of infected semidomestic mosquitoes or marauding monkeys from the jungle into near-by rural habitations provides the opportunity for human exposure. Thus, effective control of Aedes aegypti in the tropics does not eliminate yellow fever.

The second fundamentally important discovery consisted in the development of a safe vaccine to protect persons likely to be exposed to the disease. Between 1940 and 1947, more than 28 million doses of vaccine were prepared and distributed by the Yellow Fever Laboratory of the Rockefeller Foundation in New York City, while other laboratories furnished additional amounts. Moreover, growing out of the immunologic studies the mouse protection test made it possible to determine whether immune bodies had developed in vaccinated subjects; likewise, by surveying populations in extensive areas adjacent to known enzoötic zones, epidemiologists were able to determine how far the disease had extended from the sylvatic foci. Similarly, the test has been useful in discovering which mammals in the sylvatic foci had had, or are susceptible to the infection.

Undoubtedly these discoveries would have been made eventually had not the Rockefeller Foundation entered into the problem. Dr. Strode and his colleagues give generous credit to the many independent and associated investigators who have concurrently contributed to the elucidation of the questions which required solution. Nevertheless, the professional and financial support of the Foundation provided expert coördination and guidance, as well as momentum.

The volume is faultlessly written and beautifully printed. Included are an excellent bibliography and a very satisfactory combined subject-author index. The heavy linen cover is well adapted for hard use. One error which has been noted is the use of the term "endemic" instead of "enzoötic" in reference to the sylvatic infection.

Rest and Pain. By John Hilton, F.R.S., F.R.C.S. Edited by E. W. Walls, M.D., Ch.B., B.Sc., Professor of Anatomy in University of London at Middlesex Hospital Medical School, and Elliot E. Philipp, M.A., M.B., B.Chir., Honorary Demonstrator in Anatomy at Middlesex Hospital Medical School, London, in collaboration with H. J. B. Atkins, D.M., M.Ch., F.R.C.S., Director of Department of Surgery, Guy's Hospital, London. [Originally issued in 1863 with title: On the Influence of Mechanical and Physiological Rest in the Treatment of Accidents and Surgical Diseases, and the Diagnostic Value of Pain.] Sixth edition. Cloth. $8. Pp. 503, with 105 illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1950.

This is a presentation of a lecture series delivered at the Royal College of Surgeons in the middle of the nineteenth century. A surgical classic, this book has been revised and reprinted many times. There are numerous notes by the editors, which add a modern interpretation to the observations of Hilton.

This book is written in a charming and informal manner. It is replete with case histories presenting symptoms and their interpretation, anatomy, pathology, and treatment for a wide variety of diseases. In many instances, one is amazed at the difference between nineteenth and twentieth century concepts of medicine. The principal theme that recurs throughout the volume is that simple rest would benefit or cure a great many diseases. An important task of the physician is to recognize disease and to place the involved portion of the body at rest. Another point that is stressed is that rest is not harmful to normal portions of the body.

Modern physicians often fail to realize the change that has taken place in medicine within the preceding half-century. Reading this volume must increase one's admiration for the physicians of the past, who were able, without present laboratory and pharmacologic aids, to accomplish so much in the care of the sick.

Soil and Freshwater Nematodes: A Monograph. By T. Goodey, O.B.E., D.Sc., F.R.S., Head of Nematology Department, Rothamsted Experimental Station, Harpenden, Herts. Cloth. $7. Pp. 390, with 191 illustrations. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Methuen & Co., Ltd., 36 Essex St., Strand, London, W.C.2, 1951.

Most physicians whose practice includes the diagnosis and treatment of common nematode diseases are probably unaware that the roundworm parasites of man and domestic animals comprise only a small segment of the total species of nematodes in the world. By far the largest number are free-living, in soil and freshwater. Some are distant kin to the trichina worm (Trichinella spiralis) and the whipworm (Trichocephalus trichiurus); others are more nearly related to Strongyloides and the hookworms. Certain free-living nematodes, for example, species of Rhabditis, Rhabditiella, Turbatrix (the "vinegar eel"), Ditylenchus (the "onion bulb nematode"), and Heterodera (the "root-knot nematodes") have been found as contaminations of human feces, urine, or even skin lesions, and thus require diagnostic differentiation to eliminate them as potential agents of human disease.

The author of this monograph is one of the few world authorities in his field. He has provided the first up-to-date comprehensive manual on the subject, which is necessarily technical. After a short résumé of approved technics for collecting free-living nematodes and preparing them for study, the structural

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

characteristics of these worms are described; then all the known genera are systematically presented, with a description of the type species (or other better known species) of each genus, and the names of the other species of the genus are listed. For the more common species there is brief bionomic information, including the geographic locations where the organisms have been found.

As a minor criticism it may be pointed out that some of the genera included in this monograph are primarily parasites of plants and as such are important in agriculture and horticulture, while their free-living stages in the soil are relatively incidental. Strongyloides and hookworms likewise have such a free-living stage in the soil. Furthermore, the monograph would have been more comprehensive if the larval stages of these worms had received brief consideration.

Excellent figures add much to the usefulness of the text. The type is clean, and the format is unusually pleasing. The book is substantially bound. It constitutes a valuable companion volume to Goodey's "Plant Parasitic Nematodes and the Diseases They Cause" (1933) and will be welcomed as an important contribution to invertebrate zoology.

A History of Nursing. By Gladys Sellew, Ph.D., R.N., Chairman of Department of Sociology and Social Work, Rosary College, River Forest, Ill., and C. J. Nuesse, Ph.D., Assistant Professor of Sociology, Catholic University of America, Washington, D. C. Second edition. Cloth. $3.75. Pp. 439, with illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

This edition, like the first, has as its central thesis the inextricable interweaving of nursing service with all other branches of human culture. This revision remains unaltered in general philosophy. The authors retain the conviction that nurses can gain insight into their own roles through study of professional history in the light of social history.

Aspects which are considered include the relationship between social and cultural systems and health and disease, the emergence of an art of nursing among primitive people, and the advances and regressions of nursing as a result of the spiritual revolution of Christianity, the fall of Rome, the Protestant revolt and the humanitarian movement. The founding of the nursing profession by Florence Nightingale, its worldwide extension, with particular emphasis on its background, beginning, and expansion in the United States, are discussed. Considerable attention is given to the development and present status of nursing education.

This book points out not only service rendered by the nursing profession but also the socioeconomic changes through the ages that have given stimulation and direction to its development. This approach is in accord with the persistent efforts of nursing educators toward the concept that the patient and his environment are inseparably related factors in nursing care.

Retire and Be Happy. By Irving Salomon. Cloth. $2.95. Pp. 205. Greenburg, Publisher, Inc., 201 E. 57th St., New York 22, 1951.

This book contains considerable material of interest to persons about to retire, but its scope and interest are limited to those able to retire with considerable financial provisions. Although the author denies that one must be provided with an adequate income, all his criteria for successful retirement are based on the assumption that this is indeed the fact. Many will differ with the author's conclusion that a man should retire and cease making money as soon as he is able, even if this happens in his thirties or forties rather than in the more usual sixties and seventies. While decrying the needless making of money, the author nevertheless cites with apparent approval a number of instances in which hobbies have turned into lucrative occupations for the retired. The book contains too many glib assumptions, such as that a planned retirement assures a happy retirement and vice versa. In his chapter on philosophy and religion, he has stepped so gingerly to avoid offending any specific philosophic or religious groups that he ends up with a conglomeration of vague nothingness. He devotes a chapter to health, but acknowledges that it contains little or nothing because "this is a topic to be left to the medical profession."

The book is ostensibly based on a casual study of 405 retired persons, apparently all men. The material itself is rather slender to form the basis of a book, and this makes the entire manuscript repetitious and wordy. The editing is careless, exhibiting a number of instances of plural subjects with singular verbs and similar evidences of loose writing. This book is a useful effort which does not quite achieve excellence.

Annual Review of Physiology. Volume XIII. Victor E. Hall, editor, Jefferson M. Crismon and Arthur C. Giese, associate editors. Cloth. $6. Pp. 457. Annual Reviews, Inc., Stanford, California, 1951.

This volume, like the preceding ones, presents a series of papers on the current status of various topics in physiology. Each paper is written by an authority in the field. The majority of the contributors are from American laboratories; four of the papers are by European scientists. D. K. Hill of the University of London, in collaboration with A. V. Hill, has written on muscle, dealing particularly with muscle proteins and the biophysics of muscular contraction. Gestaut of Marseille has contributed a section on the electrical activity of the brain. Moruzzi of the University of Pisa has reviewed the somatic functions of the nervous system, while Runnstrom and Gustafsun of the University of Stockholm discuss developmental physiology, with particular emphasis on the biochemical approach to morphogenesis. In the discussion on permeability, the importance of distinguishing between simple diffusion, complex formation, and active selective transport is stressed. The effects of ionizing radiations on living systems are capably discussed, and the current status of certain aspects of thermophysiology is presented. Separate papers deal with the digestive system and with the liver, the latter paper placing particular emphasis on the histophysiology of the liver cell. Discussions are also devoted to other fundamental subjects, such as peripheral circulation, respiration, heart, kidney, conduction and transmission of nerve impulses, and blood volume. As might be expected, the discussion of the endocrine glands centers largely on the anterior hypophysis and the adrenal cortex, while the hypophysis and the sex hormones receive additional attention in the discussion of the physiology of reproduction. A pleasing aspect of the book is the prefatory chapter, by C. J. Wiggers, in which the author, on the basis of personal experience, interprets the influences that have aided the development of physiology during the past 50 years. This book should be of value to the reader interested in a well-documented and authoritative presentation of current trends in physiology.

Diseases of the Heart and Circulation. By Paul Wood, O.B.E., M.D., F.R.C.P., Director, Institute of Cardiology, London. Cloth. $12.50. Pp. 589, with illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2003 Guy St., Montreal, 1950.

This book, originally prepared in 1950 for distribution in England, has been reprinted for distribution in the United States. In it, the author attempts to cover the subject matter systematically, based on knowledge gained especially at the British Postgraduate Medical School, at the National Heart Hospital (London), and at the Rheumatic Fever Center at Taplow. He is in a sense, therefore, presenting his interpretations of the points of view of these important centers of British cardiology as well as those gleaned from the literature and his own experiences. This should be of considerable merit to the American reader, who, by comparing this British point of view with the traditional American one, may find some of the differences of value.

The subject matter is comprehensively covered. The style is clear and simple, the format pleasing and the illustrations ample, although at times one has the feeling that the author is presenting too many electrocardiograms (at times, seemingly all he has on a subject) for a book of this sort. The author brings in a great deal of the newer knowledge. For example, data procured with catheterization are well documented, so that the chapter on congenital heart disease is particularly well covered. The chapter on traumatic lesions is excellent and brings out certain facts that are sometimes neglected in many American textbooks. Obviously the presentation will not accord in all instances with American teachings, although the author is cognizant of the recent developments on this side of the Atlantic. This book is highly recommended as a worth while addition to the libraries of internists and cardiologists.

QUERIES AND MINOR NOTES

IMMUNIZATION DURING POLIOMYELITIS SEASON

To the Editor:—*I would like references on diphtheria immunization and other immunizations as related to poliomyelitis. Should immunizations be carried out during the "polio" months?* *D. C. Badger, M.D., Hobbs, N. Mex.*

Answer.—The Journal of Sept. 16, 1950, contains an editorial (page 240) and a letter from Dr. James P. Leake (page 259) in which earlier references on this subject are cited. Since then Anderson and Skaar (*Bull. Univ. Minnesota Hosp. and Minnesota M. Foundation* **22**:359-370 [March 9] 1951) have published a study of data from the Minnesota outbreak of 1946. Their observations are similar to those reported in the British and Australian studies. Another recent reference is "Discussion on Poliomyelitis Following Inoculations," Section of Epidemiology and State Medicine (*Proc. Roy. Soc. Med.* **43**:775-782 [Nov.] 1950). The editorial cited states, "In view of available evidence it might be advisable to postpone diphtheria and/or pertussis immunization during a poliomyelitis epidemic." During the "polio season," however, immunization has not been proved to entail any added risk to subjects in communities that are at the time free from poliomyelitis.

EYE INFECTION FROM A CORNSTALK

To the Editor:—*A patient abraded his right eye with a cornstalk about six weeks ago. I was unable to obtain a culture from the cornea, but I have obtained a fungus from the anterior chamber by paracentesis. This fungus has been identified as Paecilomyces after growth on proper mediums. He has had various types of antibiotics and chemotherapeutic agents locally and parenterally. While the wound was cauterized when first seen, the infiltration has spread over and through the cornea. The patient is at present receiving potassium iodide by mouth and sodium iodide intravenously. The pathologist says that Paecilomyces is a contaminant and not pathogenic, but the condition of the patient's eye is severe.*

M.D., Alabama.

Answer.—Paecilomyces is such a common contaminant on the special culture medium for fungi that the etiological significance of your finding seems questionable, especially since (1) cultures from the cornea have been negative and (2) the clinical course of the keratitis as described is not characteristic of fungus infection. It would seem more likely that the keratitis is due to a pathogenic bacterium or virus not easily demonstrated by culture. If it is not too late for any further attempt at constructive therapy, more intensive topical administration (by means of cotton pledgets placed on the cornea, eye baths or iontophoresis) of, alternately, an antibiotic and a sulfonamide could be tried.

TYPHOID VACCINATION

To the Editor:—*I would like information on dosage of the intracutaneous typhoid vaccination and its efficacy in comparison with the standard subcutaneous technic.*

H. B. Eisenstadt, M.D., Port Arthur, Texas.

Answer.—Intracutaneous inoculations for typhoid immunization have been reported favorably. For the "rapid method," injections are made every other day. The doses are 0.1 cc., 0.2 cc., 0.3 cc., and 0.4 cc. (a total of 1.0 cc.). It was reported by Naumer and Nerb (*Arch. Pediat.* **60**:63 [Feb.] 1943) that within one week after the initial intracutaneous injection of typhoid vaccine, agglutinins appeared and that they reached their peak at three weeks. Subcutaneous inoculations give similar results.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

CIGARET SMOKING

To the Editor:—*An asthmatic patient, who has not had an attack for over a year, desires permission to continue smoking. Does a cigaret holder make the cigaret less harmful? Can you suggest the cigaret that is the least harmful?*

M. B. Daitch, M.D., Santa Monica, Calif.

Answer.—Asthmatic attacks may be precipitated, or aggravated, by smoking, as a result of the physical irritation of the hot, particle-laden smoke; the chemical stimulation of the nose, the upper respiratory passages or the bronchi, by the ammonia in the sidestream smoke or the aldehydes, the tars or the nicotine in the mainstream smoke, with reflex bronchial contraction. More specific bronchoconstriction may attend allergic reaction to tobacco, probably to antigenic proteins in the tobacco, or the pharmacodynamic effect of the nicotine and other alkaloids in the smoke. The use of a cigaret holder, especially with fresh filters in the stem, and avoidance of burning too short a stump of cigarets, may diminish the physical and some of the chemical sources of irritation. Only relatively slight reduction in the nicotine content of the smoke is obtained by these means. Most of the so-called denicotinized cigarets contain little less nicotine than available oriental or Caribbean brands, but the recently introduced naturally low nicotine tobaccos substantially diminish this factor. So-called asthma cigarets, containing cubeb, stramonium, lobelia, potassium nitrate or other drugs, were formerly frequently used in treatment of attacks, and even tobacco has been recommended during attacks, but these are rarely recommended now.

COLD STERILIZATION OF INSTRUMENTS

To the Editor:—*What are the most reliable solutions for cold sterilization of instruments and hypodermic needles? How does 70 per cent ethyl alcohol compare with benzalkonium chloride 1:200 and with cresol solution?*

E. R. Kaback, M.D., Otisville, N. Y.

Answer.—Chemical agents cannot be relied on to sterilize instruments, syringes and needles, primarily because such agents do not destroy bacterial spores. Neither is virus of homologous serum jaundice always destroyed by chemical agents. Sterilization by heat is the only positive method; subsequent to heat sterilization, instruments may be stored in sterile solutions of certain chemical agents that contain rust-proof substances.

Price (*Arch. Surg.* **60**:492 [March] 1950) stated: "For many reasons alcohol is an unsatisfactory agent with which to attempt cold sterilization of 'sharps' and other instruments. Spores are not killed. Even vegetative bacteria may escape destruction if they are hidden in the joint of scissors, or are protected by residual grease or blood clot or if they lie in some inaccessible part of a complex instrument, to which the alcohol does not penetrate. Alcohol, or any other cold solution for that matter, should not be expected to sterilize the lumen of a needle dropped into it. A momentary dip of an instrument into alcohol is a futile gesture; yet prolonged soaking tends to rust metal. No ideal germicidal solution for cold sterilization of instruments has yet been discovered. Some of the better preparations in current use contain alcohol as an ingredient."

TYPHUS IMMUNIZATION

To the Editor:—*I am planning to travel an irregular route through the Carribbean Islands, stopping in out-of-the-way hamlets. Should I have typhus immunization before I go?*

Darius Gray Ornston, M.D., Philadelphia.

Answer.—Although the danger does not seem to be great, it would be a good precaution to have typhus immunization before starting on your journey.

BLACKSTRAP MOLASSES

To the Editor:—*I would appreciate information about the merits of blackstrap molasses.*

C. Ward Crampton, M.D., New York.

Answer.—The following information seems to be reliably established in regard to the nutritive value of blackstrap molasses.

The approximate composition is sucrose 36%, invert sugar 21%, ash 7 to 15%, and moisture 13%. (average of 100 samples from major sugar production areas, published in 1947). Ash has a potash content of about 50%, expressed as K_2O; lime 6.5%, expressed as CaO, and magnesium oxide 4.3%, expressed as MgO. The anions are chiefly sulfates and chlorides, with some carbonate, silica, and phosphate. The approximate vitamin content is, in milligrams per ounce of dry weight:

inositol	50.0
thiamine	0.024
riboflavin	0.069
pyridoxine	0.054
nicotinic acid	0.629
pantothenic acid	1.80
biotin	0.048
folic acid	0.00122

Note that in no instance, with the exception of inositol, does the vitamin content reach a value that makes an appreciable contribution to the human diet, when compared with other recognized protective foods. Despite the fact that molasses does contain a variety of minerals and vitamins, there is no justification for giving it major recognition as a protective or health food. It is widely known over the entire world as a stock food, and it is likely to remain in that category among informed persons.

ATHLETICS AND RHEUMATIC FEVER

To the Editor:—*At the age of 5 years, a boy had an acute attack of tonsillitis with fever and a secondary streptococcic infection of the blood stream. At this time, a mitral, presystolic murmur developed. This was before the days of antibiotic drugs. After months of complete bed rest, there was a seemingly complete recovery. After this episode a tonsillectomy was done. Joint symptoms were never pronounced. Now 10 years later, the patient presents no evidence of disease. May one call the disease described rheumatic fever? What advice should be given the parents regarding his participation in athletics?*

M. G. Seelig, M.D., Atherton, Calif.

Answer.—From the history of acute tonsillitis occurring at the age of 5 years, with findings of mitral and presystolic murmur, one must conclude that the patient suffered from an attack of rheumatic fever with rheumatic heart disease. If at present the patient shows no evidence of disease, it would not seem necessary to advise his parents that his participation in athletics, such as baseball, football, basketball and tennis, need be restricted.

SPECIFIC GRAVITY OF URINE

To the Editor:—*What effect have glycosuria and albuminuria on the specific gravity of the urine? Will sugar or albumin of 1+, 2+, 3+, or 4+ raise the specific gravity appreciably?*

F. A. Stewart, M.D., Colorado Springs, Colo.

Answer.—Glycosuria and albuminuria increase the specific gravity of the urine. Roughly, each 1% of dextrose in urine will increase specific gravity by 0.004 and each 1% of protein by 0.003. If 4+ protein be taken as 500 mg. per 100 cc., the specific gravity increase due to albumin would be less than 0.002. If 4+ sugar be taken as 2%, the increase would be 0.008. Actually, terms like 1+ have no quantitative value and in different laboratories might be applied to urines differing twofold to fourfold in content of sugar or albumin. In the same laboratory, 4+ may be used for one specimen with 1.8% and for another with 12% sugar content, or for one specimen with 350 mg. and another with 5,000 mg. of albumin per 100 cc. The difference in specific gravity of the two former specimens would be 0.040; of the latter two, 0.014.

POOR OBSTETRICS

To the Editor:—*A multigravida ruptured membranes spontaneously three weeks prior to term; one week later she was admitted to the hospital for what was thought to be false labor. The attendant diagnosed a breech presentation and dismissed her from the hospital after contractions ceased. Four days later, a second attendant was called; a hand prolapsed from the vagina, and the transverse presentation was recognized. The patient was hospitalized, and a rectal examination was done. The attendant felt there was dilatation of about 4 cm. and gave 0.10 cc. of posterior pituitary and repeated this dose in 30 minutes. Only a few slight contractions resulted. A third attendant saw the patient and performed a podalic version under deep ether anesthesia. There was a contraction ring at the internal os, and an arm was delivered with difficulty, with fracture of the humerus. Difficulty was experienced in delivering the after-coming head with Piper forceps through a partially relaxed contraction ring. However, both mother and child were in good condition soon after delivery. Was the use of posterior pituitary judicious?*

M.D., Georgia.

Answer.—Not only the mother and baby but also some of the attendants were fortunate in this case. This represents poor obstetrics. It is extremely hazardous and a sign of complete ignorance to give a patient posterior pituitary in the presence of a transverse presentation, regardless of the amount of cervical dilatation. Luckily the posterior pituitary produced only "a few slight contractions." Furthermore, the contraction ring at the internal os was most likely not a contraction ring but simply an indication that the cervix was not completely dilated. This incomplete dilatation most likely accounted for the difficulty in performanee of the version and also in delivery of the after-coming head with Piper forceps. One should never apply forceps before the cervix is completely dilated.

SYPHILITIC BLOOD AND TRANSFUSIONS

To the Editor:—*What is the consensus on the institutional use of syphilitic blood for transfusions (infectiousness, treatment of the blood and medicolegal aspects)?*

A. Gonzalez-Lujan, M.D., San Jose, Costa Rica, C. A.

This inquiry was referred to two authorities, whose respective replies follow.—Ed.

Answer.—It is generally accepted that Treponema pallidum in citrated blood dies after 48 to 96 hours of storage in the refrigerator. Some of the state departments of health in the United States prescribe that blood be kept at refrigerated temperature for two to four days before being used. According to current knowledge, therefore, citrated blood maintained for two to four days at refrigerated temperature is no longer capable of transmitting syphilis.

Answer.—The Bureau of Legal Medicine and Legislation has had a number of inquiries concerning this matter which indicated that there have been legal proceedings instituted against physicians who have given patients blood of a syphilitic donor, but apparently none of these cases have reached the appellate courts. They have either been settled or have terminated in trial courts. One case arose in Connecticut which reached the Supreme Court of Errors, but it was remanded to the trial courts for a new trial because of an error committed by the lower court with respect to the statute of limitations.

In the absence of an acute emergency, a physician who uses the untested blood of a donor for transfusion, and thereby transmits syphilis to the recipient, should be prepared, in case of suit, to justify his course of action by convincing evidence that in pursuing the course he did, he exercised that reasonable degree of skill, knowledge and diligence ordinarily possessed and exercised by physicians under the same or similar circumstances. In an acute emergency, a physician may be faced with the choice of using the blood of an untested donor, thereby assuming the risk of transmitting syphilis to his patient, or refusing to use the untested blood, thereby assuming the risk that his patient might die because of his refusal to use the blood. When

he is faced with such a choice, the alternatives should be fully explained to the patient or to someone authorized to act for him or her, leaving the patient or other responsible person to exercise his or her own judgment in accepting or rejecting the blood of the untested donor. In such a case, the acceptance or rejection should by all means be in writing. When a patient cannot make a rational decision and when no other authorized person is available to act in his or her stead, and an emergency exists, it is difficult to conceive of a court's condemning a physician for adopting necessary procedures to save his patient's life. After all, syphilis is curable. A life extinct is beyond recall.

PENILE LESIONS THAT SIMULATE RINGWORM

To the Editor:—*A patient had a lesion on the glans penis, and the pathologist reported that fungi were present. At first the lesion was sharply circumscribed and flat, with loss of the normal texture of the glans; later there developed a scaling appearance, which looked more like fungus. He has no evidence of fungus infection elsewhere on the body. Please give advice regarding treatment. I have tried (1) ointment sopronol® propionate-caprylates compounds; (2) desenex® ointment, and (3) indelible pencil applied locally. At present half-strength Whitfield's ointment is being used. None of these has helped.*

H. E. Rudersdorf, M.D., Sioux City, Iowa.

Answer.—Penile lesions that simulate ringworm are sometimes manifestations of diseases such as fixed drug eruption, psoriasis, lichen planus, or erythroplasia. If hyphae or spores were recovered from the lesion, it should respond to the type of treatment already used. It would be well to culture the organism and, if it is found that fungus is no longer present, to perform a biopsy. If fungus is present, the lesion might respond to treatment with carbol fuchsin or dilute, ⅛ strength, benzoic and salicylic acid (Whitfield's) ointment.

STIMULATION OF GRANULATION AND EPITHELIALIZATION

To the Editor:—*I have used Peruvian balsam for many years to stimulate granulation, and it has seemed to be effective. Is there some modern substance that has the same action? I have also used scarlet red to induce epithelialization, but it is not adherent to a moist surface. Is there a better substance that will stay more intimately applied?*

William H. Oatway Jr., M.D., La Vina, Calif.

Answer.—Among other substances used are chlorophyl compounds, red blood cell paste and acetic acid, 0.25 to 0.5 per cent mixed with 5 per cent glycerin and isotonic sodium chloride solution. Each of these has its advocates, as has Peruvian balsam. Healing of lesions may be delayed because of infection or other factors, such as poor circulation in the involved area. It is extremely doubtful that granulation and epithelialization can be stimulated in the sense that tissue repair is accelerated beyond the normal rate. Conceivably, certain of these agents may bring about a local condition more conducive to a normal healing process.

CORTISONE, HAY FEVER AND PREGNANCY

To the Editor:—*What is the status of orally administered cortisone in treatment of ragweed or other hay fever? Is there any danger in its use during any of the trimesters of pregnancy?*

M.D., Canada.

Answer.—The available evidence for the effectiveness of cortisone in hay fever is as follows: The results vary with different workers, but there is a rather general trend in the feeling that the benefit in hay fever is not as pronounced or as frequent as in asthma. On the question of the effect of cortisone given orally there is increasing evidence that the oral route is as useful as the subcutaneous. The doses of cortisone to be used in a condition such as hay fever would depress pituitary function. Since pituitary activity is an essential phase of the physiology of pregnancy it can be concluded that cortisone would be contraindicated in this state.

RECURRING GALLSTONES

To the Editor:—*A 42 year old man underwent a cholecystectomy for gallstones in May 1940. Common duct stones were removed in a second operation in 1948, at which time common duct T-tube drainage was employed for nine months, with normal cholangiograms. In January 1951, the common duct was found filled with soft stones and biliary mud and required long-armed T-tube drainage. Results of liver function tests have not been diagnostic of any malfunction of the liver. Please advise on what procedure should be done beyond prolonged drainage to obviate further recurrent deposits in the ducts.*

John C. Cottrell, M.D., Long Beach, Calif.

Answer.—No alteration in liver function has been demonstrated to accompany or precede the formation of stones in the gallbladder or biliary ducts. Furthermore, no alteration in the chemical composition of hepatic duct bile has been found to accompany or precede the formation or re-formation of stones in the biliary ducts. Theoretically an excessive amount of cholesterol in the bile or a diminished amount of bile salts and higher fatty acids, which keep the cholesterol in solution, should favor the formation of cholesterol stones; some evidence implicating both of these factors has been obtained. It seems likely that the great tendency for stone formation in the gallbladder as compared with the exceedingly rare formation of stones in the common duct is due to the concentrating function of the gallbladder mucosa and the resulting concentration of the gallbladder bile. It seems likely that in most cases gallstones form in the gallbladder and subsequently escape into the cystic, common and hepatic bile ducts. While there is considerable question that calculi form spontaneously in the bile ducts, there is no doubt that calculi, originating in the gallbladder and passing into the bile ducts, can increase markedly in size in the new location. In many cases, stasis of bile in the common bile duct brought about by the presence of stones is a factor in this growth of common duct calculi. Foreign bodies, such as rubber tubes, vitallium® tubes or glass cannulas, in the common bile duct or hepatic duct regularly cause the deposition of compounds of calcium and bile pigment. In the case described, it is probable that the common bile duct has become markedly enlarged as a result of the formation and re-formation of common duct stones and resultant biliary stasis. In cases of this type, excellent results have been obtained by anastomosis between the common bile duct and the duodenum after the stones in the duct have been removed. If such an anastomosis is made, it should be of good size, 1 to 2 cm. in length, so that duodenal content, passing into the common bile duct during digestion, may readily escape later into the duodenum. Whereas a large anastomosis usually provides complete relief, a small anastomosis may do more harm than good.

ALCOHOL AND GOUT

To the Editor:—*Why are alcoholic beverages not permitted for a patient having gout? All of my textbooks recommend omission of alcoholic beverages, but no reasons are given.*

T. E. Kilkenny, M.D., Winneconne, Wis.

Answer.—There have been divergent opinions as to the importance of alcoholic beverages in the treatment of gout, but clinicians of wide experience have repeatedly observed provocation of acute attacks of gout after alcoholic sprees.

Disturbances of uric acid elimination have been observed in healthy subjects following administration of alcoholic liquors; also, mobilization of stored purine has been noted in gouty patients following the use of alcohol (Grafe, E.: Metabolic Diseases and Their Treatment, Philadelphia, Lea & Febiger, 1933, p. 481). This evidence suggests, but does not prove, that the metabolism of gouty patients might be disturbed by alcohol.

As regards most alcoholic liquors, purine content is negligible. However, dark beers have a purine content of 0.01 to 0.02 per cent, and, if such beers are consumed in large quantities, the amount of purine added to the intake would be important.

BORIC ACID A POOR DEODORANT

To the Editor:—*I would like information regarding the use of boric acid powder as a body deodorant with respect to its efficacy and its hazards.*

Watson W. Eldridge, M.D., Washington, D. C.

Answer.—No carefully controlled studies of the effect of boric acid as a deodorant have been found. Boric acid will not penetrate the unbroken skin. Long immersion of the extremities in saturated (5 per cent) solutions fail to show any increase of boron in body fluids or excretions. However, it is rapidly absorbed through abraded skin or granulating wounds and under these circumstances is capable of producing marked toxic symptoms.

Boric acid is a very feeble bactericidal or bacteriostatic agent. Since its effectiveness as a deodorant would depend on its ability to decrease the number and type of the skin surface flora, it is probably a poor choice for deodorant purposes.

DAILY WETTING OF HAIR

To the Editor:—*Is there any harm in thoroughly wetting the hair daily, for cosmetic reasons? I have done it for years and have all my hair. Many who disclaim the practice are bald.*

M.D., New York.

Answer.—There is no harm in wetting the hair daily. It is entitled to the same care that one gives the face. A wet scalp, however, is prone to attract dirt.

CONGENITAL SYPHILIS

To the Editor:—*On page 77 of the May 5, 1951, issue of* The Journal *is a question and answer regarding congenital syphilis. The answer is completely in error. The doubtful cord serologic test is almost certainly due to transfer of maternal reagin. A saddle nose in a newborn infant is of no significance —they all have saddle noses. Under no circumstances should this infant have been treated for congenital syphilis until the diagnosis was established by the appropriate measures, which are outlined in any standard text on syphilology.*

J. E. Moore, M.D.,
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To the Editor:—*I do not fully agree with the answer to the query on "Congenital Syphilis" in* The Journal, *May 5, 1951. The infant may or may not have congenital syphilis, but certainly that diagnosis cannot be assumed in the absence of clinical manifestations and equivocal cord serologies. A single positive cord serology cannot be accepted either as final elimination or confirmation of infantile syphilis. If a steadily rising titer in quantitative Kahn tests is found on weekly or semimonthly examinations for three months in the absence of clinical manifestations, then the infant probably has congenital syphilis and treatment can be given. Also, if x-ray of the long bones reveals osteochondritis, then the infant probably has syphilis.*

J. M. Greenhouse, M.D.,
206 Metropolitan Bldg.,
435 Missouri Ave.,
East St. Louis, Ill.

To the Editor:—*In Queries and Minor Notes in* The Journal *of May 5, 1951, is a letter requesting advice on the management of an infant born of a treated syphilitic mother. The consultant's opinion that the baby is "probably syphilitic" and should be immediately treated with penicillin is erroneous. It is now recognized that many nonsyphilitic infants born of syphilitic mothers are seropositive at birth and become seronegative in the course of the first few months of life. In the absence of clearcut clinical or roentgenologic evidence of syphilis, the diagnosis must not be made purely on serologic grounds under the age of 3 months. Since the mother in question had received treatment and was seronegative and the cord blood showed only a minimal amount of reagin, it is highly probable that this infant does not have congenital syphilis.*

The proper course would be to examine this baby clinically and serologically at intervals of two to three weeks and to x-ray the long bones in search of evidence of syphilitic osseous disease. Should the clinical and roentgenographic examinations remain negative and should the serologic test change to negative in the absence of antisyphilitic treatment, congenital syphilis could be excluded in this child by the age of 4 months.

Ira Leo Schamberg, M.D.,
2031 Pine St., Philadelphia 3.

To the Editor:—*I disagree with the answer to the query on "Congenital Syphilis" in* The Journal, *May 5, 1951. The flat statement that a newborn infant with a positive cord serologic test for syphilis (and in this case the result was doubtful), born of a mother who presumably has inadequately treated latent syphilis, "probably" has syphilis is absolutely incorrect. It has been proved that maternal syphilitic reagin may appear in the blood of nonsyphilitic infants for varying periods after birth and that the results of the cord serologic test are of little importance. When positive, the test may be merely evidence of maternal rather than infant infection. The serologic test on cord blood is worthless as a working diagnostic tool, because in a child with a negative cord reaction to a serologic test for syphilis the signs of congenital syphilis may ultimately develop, and a child with a positive cord reaction may ultimately prove to be nonsyphilitic. Furthermore, once treatment for congenital syphilis has been given, the child must be considered as having had congenital syphilis for the rest of his life, even if the diagnosis might have been in error. In an apparently normal, healthy infant, there is no need to rush into therapy, as was advised, until the diagnosis is definitely established.*

Definitive diagnosis can be aided by the use of serial roentgenograms of the long bones, although, owing to artifacts and misinterpretations, these studies can be considered as only about 25% accurate. However, serologic tests for syphilis done weekly in a serial manner on the infant's blood can give an accurate estimation of the infant's syphilitic status. The quantitative titer of the infant's blood is usually equal to, or lower than, the titer of the maternal blood, and the titer subsequently falls and the reagin finally and permanently disappears in the first few weeks of life. In such infants, subsequently observed, other evidence of congenital syphilis does not develop, thus demonstrating the maternal origin of the reagin, which usually disappears in the first month of life. If by the twelfth week one finds increasing amounts of reagin in the infant's blood, the child can be considered as syphilitic. The presence of reagin, therefore, at the end of the third month is indubitable evidence that the child is syphilitic.

The presence of reagin of maternal origin in an infant's blood is more readily detected by a complement-fixation test than by a flocculation test, and for this reason the routine use of the flocculation test is recommended in infants suspected of having circulating maternal reagin rather than congenital syphilis. Associated with increasing amounts of reagin in the circulating blood of the congenital syphilitic child is the usual development of definite clinical signs of syphilis, such as dark field positive cutaneous lesions, bullae, snuffles, and periosteal bone lesions.

In regard to the mother, although the basis on which the diagnosis of syphilis was originally made is not stated, we must consider her as having syphilis, since treatment was instituted and was inadequate. Certainly, an examination of the cerebrospinal fluid is indicated in the immediate future, before or at least in the first week of therapy, and repeated a year later. The total penicillin dosage as given (6,000,000 units) is adequate for early and latent syphilis, but, assuredly, around 10,000,000 units should be given for central nervous system syphilis, and a cerebrospinal fluid examination is indicated to determine whether central nervous system syphilis exists. It should never be presumed that a negative blood serologic reaction means that the spinal fluid is normal.

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